REACHING THE POOREST CHILDREN IN RURAL SOUTHERN TANZANIA: SOCIO-CULTURAL PERSPECTIVES FOR DELIVERY AND UPTAKE OF PREVENTIVE CHILD HEALTH INTERVENTIONS

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Declaration by Candidate

I have read and understood the School's definition of plagiarism and cheating given in the Research Degrees Handbook. I declare that this thesis is my own work, and that I have acknowledged all results and quotations from the published or unpublished work of other people.

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Abstract

Background

Much of the preventable child mortality and morbidity in the world occurs in Sub-Saharan Africa. Preventive interventions exist but coverage is low. This thesis examines socio-cultural perspectives for delivery and uptake of preventive child health interventions, focussing on constraints and facilitating factors, the role of village health workers and the flow of information relating to child health interventions in rural Southern Tanzania.

Methods

Between 2004 and 2007, three linked qualitative studies were conducted in two districts of rural southern Tanzania. These included a rapid qualitative study, a longitudinal acceptability study of intermittent treatment for the prevention of malaria in infants, and an in-depth ethnographic study. The respondents include parents of young children, pregnant women, community leaders, service providers, programme implementers and decision makers at district, regional and national levels. The qualitative findings in this thesis are discussed in connection with quantitative data from household and health facility surveys that took place simultaneously in the study area.

Results

Health system, socio-cultural, political and managerial factors all played a role in both facilitating and constraining service delivery and uptake. Constraints included mistrust among council health management teams, service providers, village leaders and community members, logistic and technical failures, absenteeism, delays in service provision, shortage of qualified service providers, provider attitudes, and user charges on supposedly free services. Village health workers had no clear management guidelines, leading to questionable roles, unrealistic expectations, and poor retention, despite being locally accepted. Flow of information about health interventions was inefficient, and client-friendly health education sessions were rare.

Conclusions

Most constraints could be addressed through improved communication within and between health management teams and the community through district and health facility boards and service providers. Village health workers have the potential to deliver services to the unreached. The Ministry of Health guidelines on the recruitment and management of VHWs would be a valuable first step towards this goal.

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List of Abbreviations

ANC: Ante natal clinic

BCC: Behaviour change communication

CHMT: Council Management Health Team

CO: Clinical Officer

CORPs: Community Own resource Persons

CSPD : Child Survival and Development Programme (CSPD)

DCCO: District cold chain Officer

DED: Distinct Executive Director

DHB: District health Board

DMO: District Medical Officer

DNO: District Nursing Officer

DRCHC: District reproductive and child health coordinator

EPI: Expanded programme on immunisation

HIV: Human immunodeficiency virus

HO: Health officer

IEC: Information Education communication

IES: In-depth ethnographic study

IOM: Institute of Medicine

IPT: Intermittent preventive treatment

IPTi: Intermittent preventive treatment in infants

IPTp: Intermittent preventive treatment in pregnancy

ITN: Insecticide treated mosquito nets

LAS: Longitudinal acceptability study

MTUHA: Swahili abbreviation for HMIS (Health information management system)

NA: Nurse Assistant

OPD: Outpatient department

PHN: Public Health Nurse

RC: Regional Commissioner

RCH: Reproductive and child health

RCHC: Reproductive and child health coordinator

RQS: Rapid qualitative study

SP: Sulfadoxine pyramethamine

SSA: Sub-Saharan Africa

STI: Sexually transmitted infections

VHWs: Village health workers

WT: Watoa taarifa (village-based informant)

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Chapter 1

Background

1.0 Introduction

According to the World Health Organisation (WHO), "Under-5 mortality rate is a leading indicator of the level of child health and overall development in countries" [1]. Child survival has recently been improving globally, except in Sub-Saharan Africa (SSA). About 10.5 million child deaths occurred globally in 1999, with the largest proportion recorded in SSA [2, 3]. A large number of deaths occur in these developing countries despite readily available preventive interventions that reduce child mortality [4-6]. Availability of adequate resources and appropriate policies could save millions of young lives through known, available, simple, proven low-cost prevention and treatment options [4, 6].

Evidence shows that there are inequalities in child survival both within and between countries, due to unequal access to readily available and feasible interventions among the most vulnerable children who need them [5, 7] Millennium Development Goal number four (MDG 4) calls for a reduction by two-thirds, between 1990 and 2015, the under-five mortality rate [8]. However, achieving this goal remains a challenge, particularly in SSA [9, 10]. Understanding country-specific evidence about the contextual factors surrounding delivery and uptake of child health interventions is therefore necessary because the underlying causes of child illnesses and mortality are multifaceted [7],[11],[12].

This study reports findings from the areas of Lindi and Mtwara regions in southern Tanzania. Tanzania is among the poorest countries in the world, with the majority of the population living in poor rural areas. Rural southern Tanzania is representative of these

areas. The findings presented highlight the real-life conditions under which various stakeholders from national, regional, district, health facility and community levels interact in their efforts to reach the poorest children with IPTi and parallel child health interventions.

1.2 Rationale

This study was conducted in the context of the development and implementation of a new intervention for malaria control (IPTi), alongside other routine and new child health interventions in Tanzania. The study design enabled generation of data on the socio-cultural and other contextual factors that surrounded the delivery and uptake of both new and routine child health interventions, aimed at improving child survival in the poorest parts of Tanzania. The findings, therefore, contribute new knowledge around new and routine child health interventions. This new knowledge, together with discussion from relevant studies, is useful in informing public health actions, including policy recommendations and possible areas deserving further research towards improving child survival in rural Tanzania and similar settings.

1.3 An overview of preventive strategies addressed in this thesis

This thesis adopts a definition of preventive interventions as approaches that deliver objects that prevent or reduce the exposure to infection or condition or illness that would lead to death [13]. There are various categories of preventive interventions, such as universal and selective depending on the targeted groups [14]. This thesis therefore, focuses on selective interventions for children, and to a lesser extent pregnancy, due to cultural and public health prioritisation of these groups as most at risk of morbidity and mortality.

During the first 5 years of life, both mother and child will require at least 18 contacts with a primary-care provider to receive preventive interventions aimed at major killer diseases [15]. The key preventive interventions addressed in this thesis include: (a)

Expanded Programme on Immunization (EPI) services, (b) Intermittent Preventive Treatment for pregnant women and infants (IPTp and IPTi), (c) subsidised mosquito nets and those distributed during integrated distribution of free mosquito nets with measles vaccination, and (d) the new antimalarials, Artemether-lumefantrine (Alu). This study was conducted when these interventions were either being developed or under implementation in the study areas. Therefore, it was possible to generate relevant data as presented in this thesis.

1.3.1 Expanded Programme on Immunization (EPI)

Immunization is an important cheap tool for improving child survival, with proven evidence of impact on child morbidity and mortality [16]. Ever since its establishment in 1974, the Expanded Programme on Immunization (EPI) has tremendously improved child survival by preventing millions of deaths every year, in addition to reducing the risk of disability caused by the six most common vaccine-preventable childhood diseases, namely diphtheria, pertussis, tetanus, poliomyelitis, measles and tuberculosis, and make them available to every child in the world. For example, by 1996 there were over 500 million immunization contacts with children recorded per year, compared to less than 5% before the introduction of EPI. In addition to preventing the deaths of at least 3 million children a year, EPI contributed to at least 750,000 fewer disabled children [17].

However, there have been great variations both within and between countries in realising the achievements from the already available vaccines. For example, only about 50% of children <1 year were fully immunised in SSA, compared to global immunization coverage of almost 80% during 1990s and more evidence continues to show the gaps in immunization services in both rich and poor countries [5] [7] [17] [18].

1.3.2 Intermittent Preventive Treatment (IPT)

Intermittent Preventive Treatment (IPT) refers to the administration of a full course of an antimalarial treatment to a population at risk at specified time points, regardless of knowledge about their status of being infected or not. There are three main categories of IPT: IPT in pregnancy (IPTp), IPT in infants (IPTi) and IPT for children aged up to 5 years (IPTc).

The IPTp involves administration of sulfadoxine-pyrimethamine (SP) in the second and third trimesters of pregnancy during antenatal care (ANC) visits and is the current approach to the prevention of malaria in pregnancy [19, 20]. Studies from areas with seasonal transmission of malaria have recommended IPTc in older children who live in these areas [21] [22].

1.3.3 Intermittent Preventive Treatment (IPTi)

As detailed later, this study was conducted in the context of an IPTi project in southern Tanzania. According to the Institute of Medicine (IOM) recent publication, "IPTi is a new strategy which aims to combine the short-term protection of chemoprophylaxis with the long-term protection of naturally-acquired immunity to reduce morbidity from malaria infections during infancy" [23]. IPTi involves the delivery of an antimalarial drug to infants at the time of routine vaccinations through EPI [24]. IPTi is an innovative and promising new approach to malaria and anaemia control in children less than 1-year-old [24-26].

The first study on IPTi gave treatment doses of SP to children during the 2nd 3rd and 9th months of life in Kilombero district, Tanzania, where IPTi reduced the incidence of clinical malaria by 59%, halved the amount of severe anaemia and reduced the number of presentations with febrile illness and admission to hospital [24]. Another study conducted in Ghana found that four courses of SP, given with DPT-2, DPT-3, and

measles vaccination and at 12 months of age, reduced malaria (25%) and anaemia (35%) up to age 15 months, in a high malaria seasonal transmission area in Ghana [26].

Further studies are ongoing in various parts of Africa under the umbrella of an IPTi consortium, to resolve the outstanding scientific questions about IPTi concerning the choice of antimalarial drug for IPTi, the relationship between IPTi and the development of drug resistance, immunological response to P. falciparum infection, acceptability, cost-effectiveness and community effectiveness of IPTi [27]. As anticipated by the IPTi consortium initially, a recent independent review from the IOM shows that IPTi-SP is a promising public health strategy to reduce morbidity from malaria infections, especially the incidence of clinical malaria, among infants at high risk who reside in areas of high- or moderate-intensity transmission, and is worthy of continued investment [23]. However, there are concerns over acceptance of this intervention if implemented on a large scale, despite initial acceptance from some areas [23, 28]. Longitudinal acceptability and ethnographic investigations of acceptance of IPTi constituted an integral part of this study.

1.3.4 Mosquito nets

Insecticide treated nets (ITNs) are recommended as a public health intervention for preventing malaria in endemic areas [29]. In April 2000, the African heads of states endorsed the Abuja declaration that specified pregnant women and young children as target groups for intensive efforts to get ITNs due to their particular vulnerability to malaria [30]. The common delivery models for mosquito nets include commercial marketing, social marketing and free delivery [31-33].

1.3.5 Subsidised mosquito nets

The evidence shows that social marketing of ITNs had increased net coverage in project settings in Tanzania by the year 2000 [31]. Nevertheless, only 14% of households in Tanzania owned an ITN in 2005, and only one in ten children under 5 years and one in ten pregnant women were using an ITN [34]. Throughout Africa, the poorest are usually

the last to benefit from ITNs, even where they are highly subsidised [35]. Evidence from Tanzania has shown that a discount voucher could facilitate reaching the target groups with subsidised ITNs. Furthermore, a voucher contains additional value, such as being a tool for Information, Education, and Communication (IEC) [36, 37].

Tanzania has been implementing a national discount voucher programme since the early 2000s, funded by the Global Fund to fight AIDS, TB and Malaria. A voucher branded as *'Hati Punguzo' is* issued to women during ANC visits, and enables them to buy a net at a discount of Tshs 2750 (about $2.4) off the market price, from an appointed agent [38]. This scheme started with initial subsidies for pregnant women and was later extended to under-fives. The discount voucher scheme for ITNs started in the study areas during mid-2005.

1.3.6 Integrated distribution of free mosquito nets with measles vaccination

An integrated child health campaign with free distribution of untreated bednets bundled with insecticide, measles vaccination, vitamin A, and mebendazole for children under 5 years old ("under-fives") took place in Lindi and Mtwara regions during 2005. These activities took part during a national measles immunisation campaign. A total number of 162,254 untreated bednets were distributed in Lindi Region. Similar campaigns took place at the same time and later in other districts of Tanzania.

1.3.7 New antimalarials: artemether-lumefantrine (ALu)

In 2006, Tanzania adopted a new malaria treatment policy with a shift from SP to artemether-lumefantrine (ALu) as the first-line antimalarial drug. There was an opportunity to investigate the initial perceptions and practices about this new child health intervention, as it occurred within the fieldwork period for this thesis.

1.4 Malaria burden in Sub-Saharan Africa

Malaria is one of the leading causes of death and illness in the world, with the greatest burden being in SSA. Reliable estimates show that there were 515 million episodes (range 300–660 million) of clinical malaria worldwide in 2002 [39]. In 2006, there were approximately 247 million cases of malaria, among 3.3 billion people at risk [40].

Malaria claimed between 1.5 and 2.7 million lives globally in 1997 [41], Approximately 18% of all child deaths have been associated with malaria alone [4, 42] and in combination with other illnesses, malaria has been shown to kill 1 million children annually, a rate of one child every 30 seconds [43]. In 2005, approximately 25–35% of outpatient visits, 20–45% of hospital admissions and 15–35% of hospital deaths were due to malaria in endemic countries and it accounted for about 40% of public health expenditure in these areas [44, 45].

The latest records suggest there were an estimated 250 million cases and nearly one million malaria deaths in 2006 [42, 46], of which 91% (801,000, range 520,000–1,126,000) were in Africa and 85% were of children under 5 years [46]. Malaria-induced medical problems may contribute to more than double the mortality than is generally acknowledged [47].

As stated above, in April 2000, the African heads of states and governments signed the Abuja Declaration with a commitment to halve the burden of malaria in the continent by 2010 [48]. However, in 2005 the Abuja targets were still far beyond reach. Particular challenges included expanding coverage of the major interventions to the most vulnerable groups [49].

Socio-economic and health systems aspects of malaria

Increased community participation and greater involvement of local authorities in health matters have proven to be successful in dealing with malaria [50]. However, challenges remain in improving the health systems in poor settings so that they can deliver services promptly [45].

Understanding the human contexts in which the disease occurs and in which biomedical advances take place are crucial to successful control of malaria and other diseases [51]. Malaria occurs and has the most severe impact in poor settings in the poor countries of SSA where the vast majority of the population is impoverished [52]. Malaria is responsible for slow economic growth because it has a direct impact on Africa's human resources. It contributes to lost productivity due to illness and premature death. It hampers children's schooling and social development through both absenteeism and permanent neurological and other damage associated with severe episodes of the disease [45].

1.4.1 Malaria in Tanzania

Most of the disease burden in Tanzania is the result of preventable diseases including malaria. Over half of malaria morbidity in SSA occurs in five African countries including Tanzania, Nigeria, Democratic Republic of Congo, Ethiopia and Kenya [53] In 2004, national infant and under-five mortality rates were estimated to be 104 and 165, respectively, per 1,000 live births in Tanzania [54]. In this country alone, there were an estimated 11.5 million malaria cases in 2006; 10–12 million cases and 15,000–20,000 deaths were reported annually between 2003 and 2006 [53]

The government recognises malaria as a public health problem that contributes to increasing poverty as it has been reported to consume over US$ 12.2 billion annually [55]. Malaria control is a top priority for allocation of health resources in Tanzania. The government encourages that priority in provision of malaria interventions should be

given to pregnant women and young children who bear the greatest burden of malaria [56]. In 2004, the President urged everyone in the country to recognise malaria as a serious problem deserving the collective efforts of adults and children, the government and various local and international partners. The president also urged the MoH, NGOs, local government at all levels and community leaders to spearhead the war against malaria by facilitating preventive and curative efforts [56].

In Tanzania a high proportion of malaria cases and deaths are in children under 1 year [24]. Therefore, targeting effective malaria control at infants may produce significant reductions in infant mortality due to malaria [57]. The most common model for reaching the vulnerable groups with malaria interventions at present is integration with high coverage services such as ANC and MCH (immunization) services. The EPI contact point has been shown to have potential for integrating malaria-vaccine linked interventions due the continued improvement of immunization coverage worldwide [58].

1.4.2 Malaria control measures

In 2003, Tanzania committed itself to implement the following four strategic approaches to reduce the burden of malaria [55]:

1) Disease Management (early diagnosis and treatment)

- Intensified IEC and capacity building for communities, drug vendors, health providers and mothers on early detection and proper case management.
- Training of health facility staff in improved malaria diagnosis and treatment at health facility facilities.

2) Vector Control

- Increased demand creation for ITNs for young children and pregnant women (subsidised and free nets as well as free ITN re-treatment kit).

3) Epidemic Prevention and Control

- Establishment of systems for early warning and detection of epidemics.

4) Prevention of Malaria in Pregnancy

- Training antenatal clinic staff to encourage early and effective treatment, use of ITNs and provision of free IPT during pregnancy.

Complementary strategies will focus on human resource capacity building and information for behaviour change, operational research and performance monitoring.

1.5 Reproductive and child health (RCH) strategies in Tanzania

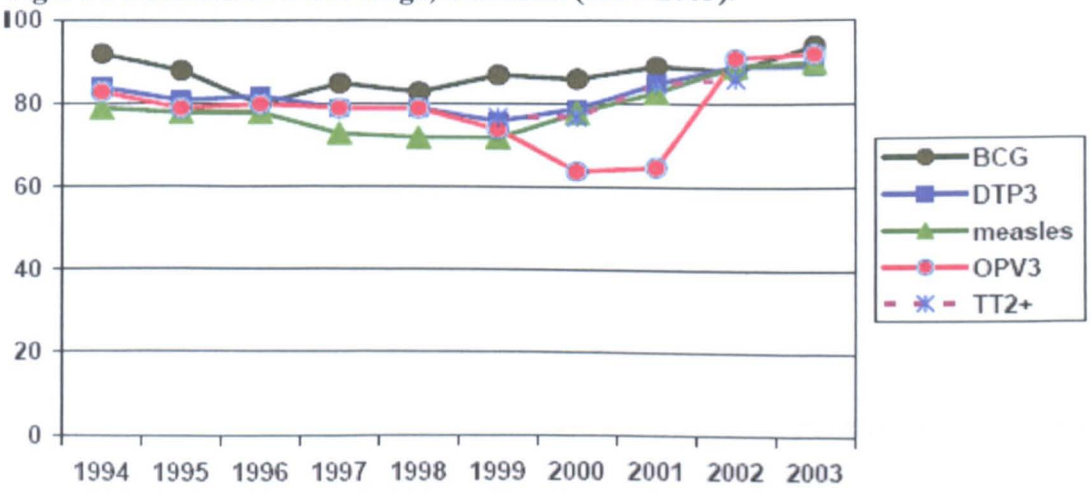
The two national strategies, namely the national RCH strategy and National Poverty Reduction Strategy (NSGRP/MKUKUTA), highlight reducing morbidity and child health problems by promoting and facilitating planning, implementation, monitoring and evaluation of priority interventions at all levels of service delivery. The strategies emphasise on improving the survival, health and wellbeing of all children and women as well as other vulnerable groups [34, 59].

Tanzania has good coverage of health facilities in urban and rural areas, most of which provide RCH services at clinics including outreach services [60]. However, delivery of health interventions through RCH remains constrained by minimal budget allocations and a human resource crisis (some with poor skills mix), with a weak incentive and salary package, poor living conditions of service providers especially in remote/rural areas, and an inadequate human resource development plan including continuing education. Moreover, getting the health services to reach all intended beneficiaries is the main challenge for the coming years in Tanzania [61, 62]. The RCH clinics in Tanzania offer a variety of services to pregnant women and children, including registration, weighing, counselling, vaccinations, ANC services and family planning. The next section describes more about EPI, the sole strategy for child immunisation in Tanzania.

1.5.1 Expanded Programme on Immunization in Tanzania

Tanzania has been participating in regional and global initiatives for the control or elimination of the six most common vaccine-preventable childhood diseases since 1975. Tanzania achieved a vaccination coverage rate 72% of all children under five by 1989 and has since maintained a high rate of coverage for these antigens, despite the global shortage of polio vaccine in 2000 and 2001(Figure 1) [63, 64].

Figure 1 National EPI Coverage, Tanzania (1994-2003).



source: Data reported to WHO, UNICEF/WHO Joint Reporting Form & 'official best estimates'

EPI in Tanzania aims at reducing morbidity and mortality caused by vaccine preventable diseases. The EPI is also committed to strengthen the services provided through the National Vaccination Strategy, including the availability of vaccines at all levels including the Ministry, National EPI headquarters, regional and district levels, hospitals, health centres and dispensaries.

According to national guidelines, EPI in Tanzania is responsible for facilitating the sustained provision of quality immunisation services with constant availability of functioning refrigerators and spares (cold chain equipment), provision of vaccinations through EPI clinics as part of RCH services, and facilitating refresher courses for vaccine providers according to new developments in the health sector in general[64].

The national immunisation guidelines also stipulate the following responsibilities of RCH staff at EPI clinics:

1.T o act as a guarantor [mdhamini] for the cold chain at health facilities: this obligation, among other reasons, obliges the guarantor to report in case of any problem with cold chain equipment as soon as possible.

2.T o act as a guarantor for vaccines: under this responsibility, the guarantor should ensure that there are adequate supplies for the cold chain, such as kerosene, gas, spare parts, RCH cards, syringes, water for diluting [kuchanganyia] the vaccines and other supplies.

3.T o conduct health education about vaccinations by talking to parents/caretakers and various community groups in the area served by the respective health facility.

4.T o identify women and children who need vaccinations and give them accordingly.

5.T o identify those who avoid vaccination and follow them up at home.

6.Record keeping: Health workers should record vaccinations on the cards of mothers and children as well as in the appropriate books at the health facility, soon after providing such services.

Outreach RCH services

The in-charge of a health facility (mostly a Clinician or Public Health Nurse) is automatically a secretary of the health committee at village level. In collaboration with other committee members, they should identify a post for outreach services. The outreach post might be at a school, office of the village executive officer or any other convenient place. According to EPI guidelines, the outreach posts should provide the same level of services as at clinics through the "five table system".

Role of village health worker/attendant

An appointed village health worker should facilitate the running of outreach services by preparing a venue for service provision, communicating health information to target audiences, and assisting in weighing or any other service delivery aspect according to her/his skills [64]. However, it is not clear how they should acquire skills.

A household survey conducted in 2004 in five districts of Southern Tanzania confirmed continuing high EPI coverage [65]. EPI may be an appropriate channel for delivering tools for controlling anaemia and malaria [66] and has recently been successfully used to deliver mebendazole treatment, vitamin A and mosquito nets in Tanzania [33].

1.6 Intermittent Preventive Treatment in Infants (IPTi) in Southern Tanzania

In 2004, a five-year multidisciplinary operational research programme was developed and implemented in five rural districts in Southern Tanzania. The project developed, implemented and evaluated a strategy for the delivery of IPTi in real life conditions. Behaviour change and communication materials were developed at the start of implementation and a Swahili brand name – "MKINGE" – was adopted. This Swahili word means "protect him or her" and the IPTi programme is widely referred to as the MKINGE programme [67].

Under this IPTi project, children attending clinics for routine vaccinations at health facilities in the project areas during their 2nd 3rd and 9th months of life received IPTi in the form of SP tablets alongside their vaccinations. It was anticipated from the design of this large-scale implementation that its results would facilitate rapid public health action if policy recommendations were made [27] [68].

Project Implementer

As part of the IPTi strategy, an 'IPTi project implementer' was seconded to the research team from a CHMT in another part of the country. This project implementer was a

Clinical Officer with public health experience. In conjunction with CHMT members, the project implementer organised the training sessions, mobilized district and regional health staff for training and later supported implementation of the IPTi strategy in the five districts. The project implementer accompanied CHMT members on visits to health facilities about every 2 months, probably increasing the frequency and focus of IPTi-related activities during routine supervision visits [69].

In Southern Tanzania, this implementation of IPTi has taken place in the context of other malaria control interventions at health facility and community levels. At health facilities, IPTp, locally literally called malaria protection for the expectant mother and her unborn child, was in place before IPTi, and it involved administering the same tablet (SP) as for IPTi. Another major national policy change regarding malaria included adoption of a new first-line malaria treatment, artemether-lumefantrine (ALu), with effect from June 2006.

Malaria interventions also reached the study communities through health facilities and local agents. For example, health workers prescribed and dispensed antimalarials at health facilities while similar supplies were available through local shops/pharmacies or from health workers who sold these drugs in the streets. Moreover, there were socially marketed insecticide-treated mosquito nets (ITNs), which were subsidised initially for pregnant women and were later extended to under-fives. Within the same period, integrated distribution of free ITNs took place as part of a national measles and Vitamin A distribution campaign. At community level, traditional practices were prominent for prevention and management of conditions relating to RCH and severe malaria signs.

1.6.1 Link between this thesis and the IPTi project in Southern Tanzania

The overall aim of the main IPTi project in Southern Tanzania was to develop, implement and evaluate a delivery strategy for IPTi in real life conditions focussing on safety, antimalarial drug resistance, costing, morbidity and mortality impact, and acceptability. The acceptability component involved three interlinked approaches to data collection, namely a rapid qualitative study (RQS), a longitudinal acceptability study (LAS) and an in-depth ethnographic phase (IES). The RQS was carried out as a formative study to facilitate development of a behaviour change and communication strategy for implementation of IPTi. Both the LAS and IES investigated the behaviours of different stakeholders, primarily in the study areas [28]. The in-depth ethnography overlapped with but went beyond the acceptability objective of the IPTi study.

In addition to participating in planning and carrying out RQS and LAS within the main IPTi project involving the key project investigators, I was solely involved in designing, carrying out and data analysis for the in-depth ethnography study. Furthermore, the full IPTi study allowed me to participate in household and health facility surveys. Therefore, this thesis benefited from triangulation data collection methods from different data collection strategies. Further details about data collection strategies for this thesis appear in chapter four.

1.7 Research question

This study sought to answer the following main question:

> What are the socio-cultural and other factors that constrain or facilitate delivery and uptake of routine and new child health interventions in rural southern Tanzania?

1.8 Organisation of this thesis

This thesis is divided into nine chapters as follows: chapter gives introduction and background to the study.

Chapter 2 presents a systematic review of the literature relevant to the aim and objective of this thesis as highlighted in chapter 3. Chapter 4 presents the methodology, including the study location, study design and methods, which guided data collection, analysis and interpretation.

The results are presented in four chapters (5-8), each with its introduction, discussion and conclusions as follows; Chapter 5: Facilitating factors and barriers to delivery of child health interventions; Chapter 6: Facilitating factors and barriers to uptake of child health interventions; Chapter 7: Potential and actual roles of VHWs in child immunisation services; and Chapter 8: Information flow for IPTi and other reproductive and child health interventions.

Chapter 9 presents a discussion of the results in comparison with findings from relevant studies, within and outside Tanzania. It also presents conclusions followed by the implications for research and for policy.

Chapter 2

Literature Review

2.1 Literature review strategy

This chapter presents a systematic review of both published and unpublished research and theories relevant to this study.

I started by generating a list of possible Medical Subject Heading (MeSH) terminology for inclusion in a systematic search in different databases namely MEDLINE, JSTOR, BiblioLine and Web of Knowledge. The search covered articles, either published in or translated into the English language and published between 1960 and 2008. The review process involved performing both single and combined searches of the earmarked MESH terminologies (table 1) and a careful screening of reported information and the reference lists to identify further publications.

The review also covered relevant grey literature and materials from international and local organisations known to have been involved in dealing with delivery of child health interventions in Tanzania and similar settings.

2.2 Child survival in Tanzania

> *"There is no mother who mourns the death of a child without questioning why it could not have been prevented"*[70].

Tanzania has recently been achieving a remarkable reduction in infant and child mortality, at a pace at which, if sustained, the country could attain the target five of the Millennium Development Goal number four (MDG4), to reduce by two-thirds, between 1990 and 2015, the under-five mortality rate [8, 34, 71-73]. According to the latest report, infant mortality in Tanzania dropped from 100 per 1000 during 1995-99 to 68 per 1000 live births during the 2000-04 [73]. Similarly, under-five mortality was 147

deaths per 1000 in 1994-99 compared to 112 deaths per 1000 during 2000–04 and 83.2 deaths per 1000 in the year 2004) [34]. However, the reality remains that southern Tanzania has a higher burden of infant mortality compared to other parts of the country [34, 65].

Table 1: MeSH Terminology for the study objectives

Objective 1 and 2 To assess the barriers to and facilitating factors for delivery of preventive child health interventions/ Assess the barriers to and facilitating factors for uptake of preventive child health interventions. (18 publications)

- (Barriers or Enabling factors)
- (Delivery of Health Care, Integrated)
- ((Preventive Health Services) OR (Immunization Programs) OR (Public Health) OR (MALARIA))
- ((Healthcare Disparities) (Rural Health)) ((Infant or Child*) OR (Maternal health services)),
- ((Coverage, Universal) AND (Africa OR Tanzania)),
- ((Patient Acceptance of Health Care) OR (Socioeconomic Factors)),
- (Tanzania or Africa) AND Uptake.

Objective 3: To analyse the potential and actual roles of volunteer village health workers in delivery of preventive child health interventions.

- Preventive Health Services) OR (Immunization Programs) OR (Public Health) OR (MALARIA)),
- ((Infant or Child*) OR (Maternal health services)),
- ((Community Health Aide*) OR (Health Manpower) OR (Consumer Participation) OR (Village health worker*)) ((village health worker*) OR (Lay Health Worker*)), ((Healthcare Disparities) OR (Rural Health))
- Tanzania OR Africa

Objective4: To elucidate dynamics of information flow for IPTi and other child preventive health interventions delivered through rural health facilities.

- (Communication barriers) OR (information dissemination) OR (persuasive communication) OR (Health promotion) OR (Diffusion of innovation)),
- ((Preventive Health Services) OR (Immuni* OR Vaccination) OR (Public Health) OR (MALARIA)) (Tanzania OR Africa).

2.3 Facilitating factors for improving survival

The recent improvements in child survival in Tanzania have been associated with doubled public expenditure on health; decentralisation and sector-wide basket funding;

and increased coverage of key child survival interventions such as vitamin A supplementation as well as a combination of malaria control interventions such as better treatment and improved coverage of untreated and insecticide-treated mosquito nets [73, 74].

Insecticide-treated nets alone have been recommended as an attractive intervention with a proven evidence to reduce 27% child mortality due to malaria (about 1 in 20 child deaths) when distributed through social marketing in rural Tanzania [32, 75, 76]

In recent years, a combination of strategies such as social and commercial marketing, targeted subsidies and integrated campaigns for distribution of free ITNs together with measles vaccination, have contributed to increased coverage of ITNs in many parts of Tanzania [31, 33, 36, 37, 77, 78].

It is also likely that relatively short distances to peripheral health facilities, high antenatal care and vaccine coverage, and trust from community towards the services provided are factors contributing to improved health seeking behaviours [28, 65, 67, 79]. Moreover, there has been a continued political support for initiatives aimed at combating malaria and improving reproductive and child health in Tanzania [56, 80]. There are more prospects that preventive and curative interventions will reach those who need them, depending on continuity of funding from international sources such as the Global Fund, President's Malaria Initiative and UNICEF [81, 82]. However, in southern Tanzania, the focus of this study, poverty, drug shortages, staff shortage and absenteeism as well as water supply problems are among the critical barriers to health service utilisation [67, 83, 84]. In southern Tanzania, a feeling among people that the hospital is only for rich people, or those who know somebody at the hospital, has been found to scare the poor from seeking both preventive and curative services [83, 84]. Such barriers might be responsible for the relatively high infant mortality rate in rural Southern Tanzania, which is reported to be highest in the country [85]. While previous

studies in southern Tanzania covered health systems issues and curative services, relying on quantitative information collected mainly from urban areas, this study went further, applying a mixed methods approach to understand the barriers and facilitating factors to the delivery and uptake of preventive child health services.

2.4 Barriers to delivery of preventive health interventions

Inequalities in access to child health services are widespread, between and within countries, thus efficacious interventions may not necessarily result in equitable community effectiveness [86, 87]. Socioeconomic inequalities in child health emanate from a complex web of inequalities in which the poor are most disadvantaged [7]. The poorest children tend to have higher exposure to disease, lower coverage of preventive and curative interventions, less access to health care at all levels, and, when services are available, poorer quality of care than children who are less poor [86]. Reported barriers to utilisation of preventive care in SSA countries include poverty, perceived side effects, user charges, distance, lack of father's involvement and favouritism [83, 88, 89] Other barriers include inadequate understanding of the intervention by health workers, poor communication between health workers and patients, unmotivated service providers, and a lack of sense of ownership[83, 88, 89]. In Mozambique, Gambia and Ghana the mothers of poorly vaccinated children were the most poor, with a poorer knowledge of which diseases their children were immunised against. Some studies also reported barriers such as superstitious views of illness causation, long waiting times, and timing of immunisation sessions, transportation problems, and weak collaboration among different sectors [90-92]. A Language barriers, for example, inability to speak Portuguese in Mozambique, has constrained utilisation of child immunisation services [91]. Mothers of well-vaccinated children are likely to seek care at health facilities during illness as found in Gambia [92].

Evidence from four rural districts of Tanzania shows that care-seeking behaviour is worse in poorer than in relatively rich families, even within a rural society that might easily be assumed to be uniformly poor [93]. Despite the high average national EPI coverage, Tanzania has a wide variation both among the districts and within the districts [94]. Reportedly, children of mothers in the lowest wealth quintile in Tanzania are less likely to have been fully immunised compared to those born to mothers in the highest wealth quintile, whereby only 56% of children of mothers with no education received full immunisation compared to 79% among children of mothers with primary complete or secondary education [34].

The following sections present some literature on ITNs, IPTp, new antimalarials, EPI/IPTi, as well as outreach clinics, which constitute the key child health interventions addressed in this study.

2.4.1 Delivery and uptake of insecticide treated nets (ITNs)

Sleeping under ITNs remains an important strategy for protecting under-fives from malaria-carrying mosquitoes [76]. However, monetary and non-monetary factors, such as high tariffs on ITNs and netting materials and marketing structures in individual countries have constrained the effectiveness of malaria control tools endemic countries of Sub-Saharan Africa [95, 96]. In Tanzania, ready-made nets were levied a sales tax of 125% between 1980 and 1992, and a Value Added Tax (VAT) on nets and netting materials during 1998/99, whereby local producers still had to pay 10% import duty and 20% VAT on raw materials, utilities and machinery [97].

Studies conducted in West and East Africa have reported sleeping patterns, daily handling, inconvenience in repairing holes, frequency of washing vs. re-treatment, fear of inhaling and perceived effect of adults or children's direct skin or eye contact with

the chemical on the net, as barriers to uptake of ITNs[98-104]. The recent efforts, supported by initiatives from various agencies such as the Global Fund and President's Malaria Initiative, are making the delivery of ITNs to targeted groups feasible through a combination of efforts [31, 65, 105-108].

There are prospects that the problems of net re-treatment will be resolved following the breakthrough in the production of long lasting nets (LLNs) [107, 109]. Despite promising scientific support for this new technology, it is worth noting that new interventions should not be only culturally compelling and engaging to local communities but also appropriate for the social and ecological setting [100]. So far, there is a lack of information about the acceptability of this new technology. ITN coverage was reportedly low until 2005 in Tanzania, despite the obvious positive impact on different health parameters, such as a 27% improvement in survival in ITN users and a substantial (63%) impact on anaemia in children [32, 76, 110] and the 1999/2000 Finance Bill that declared mosquito nets and insecticides "zero rated" items [97].

In 2004-5, only 16% of young children and 16% of pregnant women slept under an ITN the night before the Tanzania Demographic and Health Survey [34]. Estimates of voucher redemption taken from women who had completed their pregnancies in 2006 in Tanzania, show that 16% of all women who received a voucher through a national discount voucher scheme, did not redeem it because of a lack of funds to pay the top-up amount, and year on year gains are worst for the poorest households by 2007. [111].

2.4.2 Barriers to implementation of IPTp

In August 2001, Tanzania adopted the policy of SP for IPT in pregnancy, the 1st dose being given in the 20th week of pregnancy and 2nd dose in between the 30th and 36th week under a directly observed therapy to improve coverage, as recommended by the WHO [112]. As outlined in the 2002–2003 Medium Term Expenditure Framework

(MTEF) by the Tanzanian government, pregnant women have been receiving free IPTp through government-run MCH clinics [55]. However, different sources suggest a declining trend in utilisation of IPTp in pregnancy. For example, estimations in 2004 suggested that only 18% of pregnant women received at least two doses of IPTp in Tanzania [113]. IPTp uptake reached 72% for one dose in 2005 but decreased between 2005 and 2007 (Table 2). The percentage of women who received any drug to prevent malaria in pregnancy decreased from nearly 72% in 2005 to 65% in 2007, and only 30% received two doses in 2007 compared to 38% in 2005 [111].

Table 2: IPT coverage in pregnancy in Tanzania (self reported) using 2 definitions of IPT (Household Survey)

	IPT definition 1: received any drug to prevent malaria in pregnancy			IPT definition 2: (unprompted) Received SP/Fansidar		
	2005 [N=1206]	2006 [N=1240]	2007 [N=1218]	2005 [N=1206]	2006 [N=1240]	2007 [N=1218]
Received at least 1 dose of IPT	71.7 (68.1-75)	68.6 (64.9-72.1)	65.0 (61.1-68.8)	48.6 (44.4-52.9)	47.5 (43.8-51.3)	46.2 (42.3-50.2)
Received at least 2 doses of IPT	38.2 (34.7-41.8)	35.2 (31.7-38.8)	30.4 (27.0-34.0)	27.2 (23.8-30.9)	24.6 (21.6-27.9)	21.9 (19.1-25.0)

Source: Marchant et al., p. 56 [111].

Two studies conducted in different parts of Tanzania have reported a possible burden of pregnancy-related malaria when eligible women and those in early pregnancy do not receive IPTp [113, 114]. Reportedly, factors external and internal to health workers or women's individual preferences have hampered uptake of IPTp in East Africa. For example, a study in Tanzania found unexpected high attendance at antenatal clinics before 20 weeks of pregnancy, while current policy denies the use of IPTp at this time. Moreover, reportedly, health workers have questioned a continued use of SP for IPTp, after its replacement as a first-line treatment by atemether-lumefantrine (Alu) in 2006 [113].

Other factors are attitudes and practices of health workers and clients with regard to use of SP during pregnancy, stock outs, compliance with administering SP for IPTp as direct observed therapy as well as shortage of clean water and cups at ANC clinics [67, 111, 113, 115, 116]

Furthermore, reportedly, there has been confusion among CHMT and frontline ANC workers about the timing of and the recommended number of doses of IPTp1 and IPTp2, and complaints about health workers not sharing the knowledge when they returned to their posts from special training [116].

2.3 New antimalarials

Between 2000 and 2006, Tanzania made two major changes in malaria treatment policy, starting with replacing chloroquine (CQ) with sulfadoxine pyremithamine (SP) as first-line malaria treatment, before then replacing SP with (Alu)

There was an intense debate among decision makers, researchers, academicians, drug users, dispensers and media in Tanzania during transition period from CQ during early 2000. Some of the media portrayed severe side effects of SP rather than its benefits at a time when research evidence had suggested the inevitability of switching to a new option, given a widespread resistance to CQ [117-121]. Nevertheless, after new policy, many adults and children widely used SP for malaria treatment and the drug has also widely been used for IPTp across sub-Saharan Africa [122]. A study conducted in Tanzania during early 2000-revealed positive feedback about SP from 80.3% of patients who said that they were relieved from malaria symptoms: 60% of them had sought it from private community pharmacies without prescriptions compared to 40% who had [123].

SP lasted for quite a few years in Tanzania before the Ministry of Health inevitably replaced it with (Alu) as first-line therapy in its national malaria-control guidelines in 2004, before starting actual implementation in 2006 [124]. A pilot study conducted in

Tanzania found that ACT would lead to a 6-fold increase in the national budget (nearly 10% of the total health sector recurrent budget), besides other substantial non-drug costs required for rolling out ACTs, over the first three years [125]. The initial price of ACT of US$8–10 made it ten times more expensive than SP. Hence, it was perceived as obviously unaffordable among Tanzanians, most of whom live on less than $2 a day and rely on drugs from private shops for self-treatment of malaria symptoms [82]. Concerns over the sustainability of ACT were so obvious that, reportedly, a Minister of Health in Tanzania regretfully declared the end of the "short honeymoon with SP", while projecting that the whole of the MOH's budget would be spent on ACT, if there were 18 million episodes of malaria in a year [82]. However, donor funding has helped in delivery of ACT and addressing obstacles to access, and in awareness creation especially on seeking appropriate and timely treatment with a special focus on improving access in remote rural areas [82, 124, 126]. So far, no publication has documented the delivery and uptake of ACT at a grassroots level. Moreover, the introduction of ACT at the same time with IPTi-SP meant that accompanying information about two different drugs for malaria prevention and treatment would reach communities simultaneously. This made southern Tanzania the first place in the world to implement both ACT and IPTi-SP, hence warranting an opportunity to investigate the initial perceptions and practices about these new malaria interventions in the study areas.

2.4 Barriers to EPI and IPTi

IPTi is a new strategy, which aims to combine the short-term protection of chemoprophylaxis with the long-term protection of naturally acquired immunity to reduce morbidity from malaria infections during infancy, and depends on the EPI schedule [23, 24]. So far, delivery of IPTi has mainly been under research project settings, and generally, at the beginning of this study, there was no information about acceptability of IPTi when implemented through the routine health system alongside

EPI services [27]. Already, there was high acceptance and promising utilisation of EPI services before IPTi in the study areas, where mothers highly trusted the health system and services offered [65, 67]. However, it was not known how both community and service providers would perceive IPTi and its addition into routine EPI services, and how such perceptions might affect utilisation of EPI services. The acceptability component of the IPTi project in southern Tanzania and ethnographic phase of this study captured information as IPTi implementation was taking place [28, 89].

At the beginning of this study, very little was known on the barriers to delivery and uptake in Mozambique, where Pool et al [89] had found an increasing acceptance of IPTi despite the initial resistance to utilisation. The initial resistance in Mozambique related to the research procedures used in a clinical trial setting: there were negative perceptions about used height measuring equipment, inclusion of safety information on a familiar drug (SP) and blood taking. Despite being a potentially beneficial public health intervention, decisions to promote IPTi use on a wide scale depended, among others, on the results of long-term follow-up studies to resolve uncertainties about long-term safety and acceptability, at the same time considering the effect on provision and utilisation of existing EPI and other parallel interventions [27, 28, 89].

Outreach clinics

Outreach services are reported to have contributed to improved access to and utilisation of both immunization and antenatal care services, for example in Benin, Guinea and Ethiopia[1] [127-129].

Full immunization coverage for BCG and 3 doses of DPT and polio vaccines has reportedly been higher among children living closer to outreach clinics, as found in

[1] The "unreached" are defined as especially vulnerable groups (children, women, minorities, inhabitants of remote areas, etc.,); in this thesis, it represents those children and women who miss the routine preventive services through ANC and EPI clinics.

Bangladesh and India. Similarly, outreach and mobile clinics reduced the gap in the immunization coverage and awareness about the importance of immunisation between remote villages and those located close to health facilities in Senegal [130]. Therefore, outreach clinics are a potential channel to reach the poorest children in remote areas with immunisation and other child health interventions. However, factors such as lack of suitable venues and furniture and cancellation of an outreach session reportedly deterred use of outreach clinics in Ghana and Mozambique [90]. So far, the national EPI guidelines mention the existence of outreach clinics, responsible people and RCH services including immunisation, growth monitoring etc. Nevertheless, there is a lack of published information about outreach clinics and delivery of child health interventions in southern Tanzania.

2.5 Volunteer village health workers in child immunisation services

Globally, immunization services have been the centre of renewed interest with increased funding to improve services, acceleration of the introduction of new vaccines, and the development of a health systems approach to improve vaccine delivery [91, 131]. However, the challenge has remained in delivering effective interventions, including vaccines, to reach the children who need them most, particularly in Sub-Saharan African countries (SSA) [6]. These countries are characterised by poorly performing health care systems, which remains inadequate to meet existing needs for delivery of both preventive and curative health services [132-134]. The critical human resource shortage in SSA certainly affects the poor rural where the largest population at most risk of illness resides. The density of human resources for health is a key indicator of a country's ability to enhance delivery of health interventions including coverage of vaccines [135]. The human resource crisis in health care is an essential obstacle to realisation of the health related targets for the MDGs in Tanzania and other SSA countries [106, 136]. Therefore, in these settings there is an urgent need for

interventions aimed at recruitment, training and retention of alternative care providers, particularly focusing on rural settings where the crisis is particularly serious

Community-based initiatives are potentially feasible short-term options for extending the delivery of interventions in hard to reach areas while strengthening national health systems [6]. A popular community-based strategy developed across the world in an attempt to address the human resource shortage is the use of community health workers (CHWs), who are local people, selected by their own communities, where they are more likely to remain, providing simple curative and preventive care, after rapid training followed up by refresher programs. CHWs can be volunteers or receive a salary (although they were not intended to be civil servants), linking with other sectors and acting as change agents within their own communities[137]. CHWs are interchangeably termed in different communities as female community health volunteers, village health guides [138], lay health workers (LHWs) [139], and village health workers (VHWs). In Tanzania, CHWs are popularly translated in Swahili as *Wahudumu wa afya vijijini*, i.e. Village Health workers (VHWs). The need to tap the potential of VHWs in extending coverage and providing care of reasonable level to otherwise underserved areas, is increasingly becoming necessary [133]. VHWs are suited to play an essential role in supporting the public health services, especially in the wake of human resource constraints in many SSA countries [140]. These non-health worker volunteers have shown promising benefits in facilitating higher vaccine coverage [139, 141]. Studies conducted in various parts of Africa have recommended VHWs as economically viable, therefore a potentially cost-effective human resource to help in reducing under-5 mortality in disadvantaged areas. For example, as a low-cost, community-based intervention, VHWs have attended children with prompt and adequate treatment of malaria in Zaire, Burkina Faso, Nigeria and Ethiopia [132, 133, 137, 142, 143]. Even with a low-level of education, VHWs have also been capable of acquiring the skills

needed to manage children with ARI and pneumonia in Senegal, Bolivia , Bangladesh, Pakistan and Uganda [144-147]. They have also played a remarkable role in diagnosing and treating trachoma during a pilot study in Ghana [148], and have been useful in HIV/AIDS and TB-related research-based interventions in South Africa, Kenya and Tanzania [149-153].

Moreover, VHWs have successfully helped in identification and treatment of common skin infections in Kenyan children following a short training period [154]. Likewise, there is evidence on the role of VHWs in record keeping, contributing to improved access to health care as well as serving as an important link between the periphery (the communities) and the health sector [155]. Factors associated with the positive effects of VHWs in different settings include a limited number of clearly defined tasks, provision of one-on-one appropriate training, periodic refresher courses and continuous supervision (in Bolivia), and duration as a VHW/TBA, previous training on record keeping, and receiving feedback (in Nigeria) [155].

Besides the success of using VHWs, there have been some shortcomings, such as over diagnosis of malaria and ARI leading to dispensing drugs to ineligible patients. For example, in Kenya, VHWs often made mistakes assessing symptoms, classifying illnesses, and prescribing correct doses of medications, due to complexity of guidelines and inadequate clinical supervision[156]; their ambiguous position in the health care system; lack of motivation such as on the job training; unrealistic expectations; poor initial planning; and problems of sustainability [156, 157].

2.5.1 Sustaining VHWs

Central to the future of VHWs is the question of sustainability and continued effectiveness of this alternative and feasible health interventions delivery strategy [133, 137, 139]. User charges for antimalarials have been used as one way to raise financial

incentives for VHWs in programme settings [157]. However, while some studies have reported that the inadequate performance of VHWs has been due to difficult working conditions while volunteering without incentives [158], other experience has shown the success of volunteering VHWs in a TB programme with no additional funds or facilities [150].

2.5.2 Role of VHWs in immunisation: gaps in knowledge

VHWs are known to have raised awareness about immunisation and contraception in Bangladesh. In contrast, in India, they have had a less than expected effect on vaccination coverage [138, 159]. Moreover, most of the available publications and reports about VHWs are from small-scale locally initiated projects by researchers, NGOs or on official pilot projects. Nevertheless, there is a little published work on the role of VHWs in large-scale national programs [138, 160].

VHWs have been in place for over a decade in southern Tanzania, including the southern part where this study was conducted. There is, however, a lack of published information from this area, on the role played by VHWs, in routine immunisation and delivery of other child health interventions. This study adds more information on the role of VHWs in delivery of immunisation and broader health services in southern Tanzania, an area with acute human resource shortages.

2.6 Information flow for child health interventions

Behaviour change communication (BCC) is important in any health intervention. BCC promotes healthy behaviours, can introduce new technologies and ensure broader uptake [161]. This is a multidisciplinary area, including health education, health promotion and health literacy strategies, which are applied in explaining the dynamics of health information communication with regard to public health issues, including delivery of

health interventions. Health education is an essential component in communication and promotion of maternal and child health, prevention of communicable diseases, promotion of immunisation and other preventive services [162]. It is important that BCC takes account of the social and economic circumstances of individuals, and does not focus solely on transmission of information, or it can fail to achieve the expected results in terms of behaviour change [162].

Therefore, it is necessary to understand the dynamics of information flow at community and health facility levels, in order to be able to understand the broader context surrounding both professionals and users of health interventions. The following sections present some theories that have focused on socio-cultural aspects of health information flow, followed by evidence of various approaches, as applied in various parts of the world and in Tanzania in particular.

2.7 Theory-informed interventions

Theory, informed interventions rely on health education as a tool for disease control, focusing on the social context of behavioural decisions and helping people to develop the personal and social skills required to make positive health behaviour choices [162]. Various theory driven approaches have been used in raising awareness, creating demand, changing attitude and behaviour, and facilitating adoption of new health technologies, across a wide range of population groups. Examples of such include social marketing*[2][163] health education campaigns, promotion and publicity [162, 164].

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*[2] Social marketing, as defined by (Andreason 1995), is an approach where the experience of commercial marketing is applied to a product which has a social benefit, with the main motivation being social improvement rather than financial gain to the marketer. It also focuses on changing attitude and behaviour of the target audiences so that they can adopt existing or new technology or skills aimed at improving their health.

Social marketing has been associated with increased coverage, knowledge and behaviour change regarding ITNs, family planning, condoms, oral rehydration interventions, water purification, and new antimalarials (ACT), through both promoting and supplying such public health goods at subsidised prices (e.g. in Kenya, Pakistan, Rwanda, Tanzania and Zimbabwe) [31, 37, 75, 77, 78, 108, 162, 165-168]. Nevertheless, there are arguments that social marketing strategies have limitations in reaching the poor and vulnerable with information services and products, as noted regarding deworming drugs among Kenyan children and condoms in different developing nations [169, 170].

Culturally compelling behaviour change is another strategy that has facilitated adoption of technologies and ideas through, for example, songs, theatre, poems and other culturally appropriate communication practices. Culturally compelling behaviour change strategies have proved successful in various parts of Africa including among the West African communities, where the strategy enabled a quick response to repairing ITNs [100]. Application of songs and plays has also facilitated health planning and immunisation in Malawi [171]. Moreover, in Malawi, theatre groups dramatised grievances of the villagers about unacceptable behaviours of village officials and a few rich villagers who had been abusing the wells and health facility buildings for personal reasons. The drama led to some of these influential individuals donating new wells and buildings for health facilities. Theatre and songs have also stimulated adoption of such preventive measures as cementing of wells, chlorinating water, the manufacture of pit latrines, recording of basic health data and prescription of antimalarials and antibiotics [171].

A long term and still valid approach in explaining how innovations reach their target audiences, and the corresponding responses, is the diffusion of innovation research. This theory suggests that an innovation is more likely to be taken up if it is simple to carry out, compatible with the existing situation, can be tried out by the community, produces results that are observable in the short term, and provides perceived advantages over existing method [172]. The definition of diffusion of health innovation theory centres around seven elements, also referred to as "accounting scheme" as applied in the fields of sociology, anthropology, rural sociology, and mass communications. The process of diffusion involves the following elements: (1) acceptance, (2) over time, (3) of some specific item – an idea or practice, (4) by individuals, groups or other adopting units, linked to (5) specific channels of communication, (6) to a social structure, and (7) to a given system of values, or culture [172].

1) Acceptance: This may include the response to an item according to the meaning attached to it in different societies. Acceptance also considers whether new information is internalised in the personalities or groups, and whether it is central to the social institutions of a group, with a view to distinguish between a mere external acceptance of a form and its internalisation. In practice, acceptance of new health interventions depends, among others, on the perceived benefits at different levels. For example, Berman et al [173] asserts that Artemisinin-based combination therapy (ACT) for malaria is rapidly gaining acceptance as an effective approach for countering the spread and intensity of *Plasmodium falciparum* resistance to chloroquine, sulfadoxine/ pyrimethamine and other antimalarial drugs. The authors also project that the early use of this drug may delay resistance to these drugs. However, the acceptance mentioned once in the article seems to focus on high scientific information with no explanation of its internalisation with its intended target personalities or groups, e.g. service providers, mothers and different influential people at the grassroots level. This study had an

opportunity to address the mentioned gap on ACT and similarly for other child health interventions.

2) Time: Time is a crucial element in the diffusion process as it helps in understanding different channels such as mass communication "campaigns" and other forms of information communication. Time can explain why diffusion of innovations may require a long or short period to achieve universal coverage among different communities and among the so-called early and late adopters within each community [172]. This suggests that different individuals may need different time intervals between receiving and accepting health interventions.

3) A specific item: Diffusion theory classifies items into two dimensions: material vs. non-material items. Material items find more ready acceptance because (1) they are more easily communicated; (2) their utility is more readily demonstrable; and (3) typically, they are perceived as having fewer ramifications in other spheres of personal and social life.

4) Units of adoption: Some innovations may require collective adoption but permit any given individual to adopt or not (the telephone, for example). One of the key focuses of anthropology is on the group as an adopting unit for new technology. However, cultural factors may either favour or restrict collective adoption of technology.

5) **Channels:** The channels that transmit information have a crucial influence on adoption of an innovation and can help in explaining how information about the innovation travelled from the source to the intended individuals or groups. Interpersonal relations, the role of key agents in transmission of change, decision-making processes, mass media and disparities in position among and within societies are likely to be

reflected in disparities in acceptance, access and utilisation of new technologies. An example of this would be how the use of radio or television would not be useful in areas where very few or no community members own such items. Likewise, the inequalities in health service utilisation in most cases show that the poorest are most have difficult access to health interventions accompanying information.

6) Social structure: The hierarchies in social and political organisations can act as either obstacles or facilitators in communicating new information and technologies in their areas. For example, those in the higher strata may block the diffusion of symbolically meaningful items to those in the lesser status. Such variations within social groups can affect the extent of diffusion of health interventions within communities.

7) Value systems: Attitudes, values (including beliefs) and personality can influence acceptance of innovation at the level of individual and group living in a given cultural setting.

Enabling factors for information flow

It is widely agreed that changes in knowledge do not necessarily lead to changes in attitude or behaviour, due to many factors that interact to determine health behaviour. Green [174] demonstrates the importance of considering predisposing, enabling and reinforcing factors surrounding health education and promotion strategies. Processes of change often must include institutional decision-makers, groups, neighbourhoods, organizations, communities and electorates. Behaviours at all of these levels can shape health promotion. The settings in which health promotion may take place, therefore, become a primary consideration for this review. Schools, worksites, homes, and health care settings are popular places for communicating health information in developing

countries. An appropriate strategy of IEC leads to or reinforces desirable attitudes and behaviour through improved health literacy [175].

New medical innovations and local culture

There has also been an interest to study what happens when new biomedical information reaches the local community, through what Muela et a [176]. refer to as medical "syncretism". "Syncretism" as applied here is the analysis of processes of blending of biomedical with indigenous knowledge. An analysis of medical syncretism in Tanzania shows how even well understood messages may end up being interpreted by the population differently to the intended meaning. Health workers' knowledge can be a crucial source of misconceptions or incorrect understanding if they lack sufficient information about health interventions. Sometimes, health providers may for some reasons distort information deliberately, e.g. when they want to reinforce compliance. This study also looked at how health workers, as the main channel of communication, shaped information about IPTi and other interventions, and how such information influenced the knowledge and practices in the community.

Challenges

Understanding the initial planning of health communication strategies, communication processes, evaluation and dissemination of information can help in explaining the success or failure of information flow strategies [161]. The communication channels chosen may produce varying impact in terms of knowledge and behaviour change between different social and economic groups in the community. For example, Nutbeam [162] recommends personal forms of communication and community-based educational outreach as ways of empowering the audiences to act and support others. Health promotion for specific, funded interventions seems to be fashionable recently. However,

the sustainability of individual interventions becomes questionable if governments should adopt them [162].

One challenge is that communication of new health information may not necessarily lead to increased understanding. For example, studies conducted in Ethiopia, Kenya and Uganda revealed a mismatch between knowledge about HIV prevention and practice. In these studies, despite the fact the majority of respondents had heard that condoms could prevent HIV (Human immunodeficiency virus) infection, only a few of them had actually used any in risky sexual practices. One of the reasons was a perception that they might not get infection [177-179]. Use of inappropriate communication media can lead to apathy towards the messages. Much of the health education conducted in different parts of the world during the 1970's was only effective among the most educated and economically advantaged in the community [162]. For example, pamphlets and radio for health education proved ineffective among the communities of rural Malawi, where illiteracy was high and only about 12% had access to radios. Moreover, local communities in Malawi perceived talks and demonstrations by health extension workers as a heavy-handed "top down" approach whereby health assistants merely preached to the peasant communities without interacting with them freely or treating their problems equally [171].

For over a decade, social marketing activities have been promoting the use of ITNs and insecticide for net re-treatment as well as discount voucher schemes for ITNs, at various operational levels in Tanzania [32, 164, 180]. Research projects and routine health system have disseminated health information about malaria in rural and urban areas through MCH campaigns, road shows, comedies, public lecture, cinema show, question and answer sessions, dancing competitions, permanent billboards and drug shops [180, 181]. Moreover, mass media and local government health authorities have repeatedly

been used to promote campaigns such as measles immunisation, Vitamin A, distribution of free ITNs and new malaria treatments [33].

Despite this, the use of ITNs and particularly re-treatment of mosquito nets, remain low in many areas. Reportedly, the factors associated with low uptake of ITNs include sleeping and use patterns, daily handling, frequency of washing vs. re-treatment, cost of insecticide, fear of inhaling insecticide, direct skin or eye contact with the chemical on the wet nets and keeping the chemical out of the reach of children [76, 98, 101-104, 179].

There remains a need understand the flow of information about health issues at the grassroots level, the level at which most of the health system is directed. Literature reviewed in this chapter examines theoretical and practical aspects that are relevant to describing the process of information flow for IPTi and parallel child preventive health interventions in rural southern Tanzania.

2.7 Flow of health information in Tanzania

Health policy analysis should focus on the content of reform, the actors involved in policy reform, the processes contingent on developing and implementing change, and the context within which policy is developed [182]. Health education of parents in matters of child health, education, including education channelled through community development agencies, on food production (crops, fish and animal protein), on man and environment in relation to health, on personal and domestic hygiene and prophylaxis, were among the initial, research-based recommendations to the Government of Tanganyika (now Tanzania), soon after independence [183]. These recommendations from surveys conducted within two years of independence most likely backed the Government's declaration of war and initiatives against diseases, illiteracy and poverty, as major enemies of development.

The second national development strategy of the early 1970's endorsed mass radio campaigns such as "Mtu Ni Afya" (man is health) and "chakula ni uhai" (food is life). These campaigns were geared towards provision of clear and simple information on symptoms and prevention against malaria, diarrhoea, malnutrition and other common health problems. The campaigns involved the formation of village-based groups, which listened to and discussed health massages, followed by individual and collective action. The newly literate individuals also received simple, related reading materials to support them in their own and community preventive health practices. These initiatives not only fostered public intensive and long-term transmission of health information, but also encouraged appropriate group, communal and self-help measures such as building latrines and malaria control [171, 176, 184, 185]. Similar schemes of adult educators also exploded in other African countries during the 1970s, in which the adult educators conveyed health education messages in communities through theatre [171].

Health information flow in Tanzania: current trends

A recent study in different parts of Tanzania found ineffective communication strategies used in health education communication between systems and providers, due to a lack of adequate knowledge and information exchange capacities among the health providers and the ability to share that information with the targeted community. The study concluded that most of community members were not applying the information received from health providers because they lacked the necessary background knowledge [186].

While the earlier "*Mtu ni Afya*" campaigns are no longer operating, the mass media continues to disseminate some health information, in the form of social marketing or announcements by both government and non-government organisations. Recent behaviour change communications in Tanzania have focused on dissemination of information about the spread and prevention of HIV/AIDS, malaria and TB, to mention

a few. This study focuses on information flow for malaria-vaccine linked interventions, building on the BCC strategy developed, piloted and evaluated locally in the context of other national health promotion activities targeting young children. None of the studies on health promotion has operated in a similar context, content, process or with similar actors in the study areas.

All reviewed studies from Tanzania have mostly described the process of developing and evaluating the information flow relating to specific project objectives. This study goes beyond this in explaining how information about IPTi and other parallel health interventions reached the intended users, describing enabling and constraining factors as well as how the local communities and health providers fitted such new information into their lives. Additionally, this study applies various theories in examining how health innovation diffused in the study areas, and how this innovation fits into the medical syncretism approach, with information beyond that presented by Muela et al.,[176] from elsewhere in rural Southern Tanzania.

Chapter 3

3. Aim and objectives

3.1 Overall Aim

The overall aim is to examine the factors that facilitate and constrain the delivery and uptake of preventive child health interventions in rural southern Tanzania.

3.2 Objectives

1. To assess the barriers to and facilitating factors for delivery of preventive child health interventions.
2. To assess the barriers to and facilitating factors for uptake of preventive child health interventions.
3. To analyse the potential and actual roles of volunteer village health workers in delivery of preventive child health interventions.
4. To elucidate the dynamics of information flow about preventive child health interventions.

Chapter 4

Methodology

4.1 Study areas: socio-economic, political and geographical profile

This thesis relies on data from five rural districts of Lindi and Mtwara regions, southern Tanzania (see Figure 2 Map of Tanzania). Tanzania is one of the least developed countries in Sub-Saharan Africa (SSA) with a per capita GNP of around US$ 280 [54]. Lindi and Mtwara regions have the highest infant mortality in the country: 121 per 1000 live births compared to 67 in the Northern regions of Arusha and Kilimanjaro[34]. The five districts include Nachingwea, Lindi Rural and Ruangwa in Lindi region, and Tandahimba and Newala in Mtwara region.

Figure 2: Map of Tanzania showing the five study districts

The five study districts cover an area of approximately 20,000 km^2, with a total population of about 900 000[85]. A district in Tanzania refers to an administrative

geographical area, formed by between 3 and 10 smaller areas known as divisions. Overall, the civil structure (Table 3) in the five study districts comprises 24 divisions. Each division is split into wards, on average four of which form a division. A ward represents 3-5 villages and each village is made of sub villages [*vitongoji*]. A sub-village (*Kitongoji)* is the lowest government administrative structure in Tanzania. One kitongoji has about 100 households on average, and about 500 people.

Table 3: Civil Structure in the study area

Region	District	Number of Divisions	Wards	Villages	Population
Lindi	Lindi Rural	10	28	128	194,100
	Ruangwa	3	16	75	168,744
	Nachingwea	5	27	104	149,186
Mtwara	Newala	3	22	156	115,138
	Tandahimba	3	22	138	191,527

Parts of Tandahimba and Newala are on the Makonde plateau, up to 900 m above sea level. Lindi Rural, Ruangwa and Nachingwea have both mountainous areas and low-lying plains. The major permanent rivers in the region are the Ruvuma (on the border with Mozambique), Lukuledi, Matandu and Mavuji. Lindi Rural borders the Indian Ocean to the east. There are two main rainy seasons, November–December and February–May. The area has a wide mix of ethnic groups, the most common being Yao, Makonde, Mwera, Matumbi, Ndonde, Ngindo, Nyasa, Ngoni and Makua. Although most people speak the language of their own ethnic group, the national language [Swahili], a Bantu-based tongue with Arabic borrowings, is widely spoken in the study areas.

The most common occupations are subsistence farming, fishing and small-scale trading. Cashew nuts, sesame and groundnuts are the major cash crops while food crops are cassava, maize, sorghum and paddy. The districts are relatively undeveloped with high mortality, malnutrition and illiteracy rates. Most people live in mud-walled and thatched-roof houses, but some houses have corrugated roofs. Mains electricity is available in less than 1% of households and most villages have no electricity [32, 65]. There are only two tarmac roads, which cross parts of the study districts. Most rural roads are unpaved and hence some are not passable during rainy seasons while others are so steep that some villages are not accessible by car [65, 79].

Water supply is very poor in most parts of the study districts, and includes seasonal hand-dug wells, rain harvesting by diverting rain streams into household wells or by blocking flooding streams for immediate collection, communal boreholes, natural springs and river water. Water sources are generally sparsely distributed.

Management of health services in the districts

Under the decentralized health system in Tanzania, health service delivery is the responsibility of District Council Health Management Teams (CHMTs).[69]Council Health Management Team (CHMT) refers to the Municipal, Council or District Health Management Teams or in their acronyms CHMT or DHMT respectively, formed after the United Republic of Tanzania started health sector reform policy since the early the 1990's. After the health sector reform policy, the Ministry of Health primarily remained responsible for policy formulation and overall management, with structures such as Regional Health Management Teams as well as overseeing health service supervision at regional levels. The CHMT members constitute the District Medical Officer, District Nursing Officer, District Health Officer and the Medical Officer in charge of district hospital, District Pharmacist, Hospital Secretary, District Laboratory Technician and District Dentist. In addition to these seven voting members, the CHMT has "Co-opted"

members who cannot vote but represent a specific disease area, such as the District Cold Chain Officer, District Reproductive and Child health Coordinator, District HIV/AIDS coordinator and District Eye Coordinator [94, 187]

ROLES AND FUNCTIONS OF THE CHMT

The roles and functions of the CHMT as stipulated by the Ministry of Health guidelines [187]) are as follows:-

1. To prepare comprehensive district health plans in line with the district health needs and National District Health Planning Guidelines and to ensure the following;
2. That health activities are implemented by hospitals, health centres and dispensaries, community owned resource persons and the communities as per comprehensive district health plan;
3. The provision of transport, drugs, vaccines, medical supplies, equipment and reagents to hospitals, health centres and dispensaries;
4. Respond to epidemics, emergencies and plan for control and preventive measures accordingly;
5. Carrying out supportive supervision to district health staff at all levels in the district;
6. That quality health services are provided in line with national standards;
7. Health legislation, regulations and professional ethics, and code of conduct are adhered to in the district;
8. Data collection, analysis and feedback and that these are used by health workers to plan and implement proper interventions;
9. Identify priority areas, organize and conduct operational research in the district.
10. Compile and analyse quarterly and annual progress and financial reports and submit them to the Council Health Service Board and to the Regional Health Management Team.

11. Organise meetings of all key health partners operating in the district in order to identify and c-ordinate all health activities;

12. Organise and support outreach health services;

13. Monitor and evaluate implementation of health activities in the district.

Health service structure in the study areas

In 2006, the public health system in the IPTi project area in southern Tanzania comprised a network of 134 health facilities including a few private not-for- profit dispensaries and hospitals run by NGOs, generally Christian Mission organizations [65, 79, 188]. The public facilities included 4 hospitals (with the exception of Lindi Rural, district hospital), 14 health centres and 113 dispensaries. In addition, there were 3 mission hospitals and health centres. In the early 1990's all villages had two VHWs, one male and one female, through a UNICEF supported programme. However, the Government did not strongly support this programme and there have been minimal efforts since then, to retain, support, manage and motivate these VHWs and most are no longer active.

Many of these facilities had a shortage of qualified prescribers (Medical Officer, Assistant Medical Officer, Clinical Officer or Assistant Clinical Officer) (Table 4). Therefore sick children were not infrequently managed by nursing cadres (Nursing Officers, Nurse Midwives, Public Health Nurse 'B' or Maternal and Child Health Aides) even though these staff are, strictly speaking, not supposed to prescribe. Staff in these nursing cadres are generally responsible for preventive services such as antenatal care and well-child visits for weighing and vaccination.. Only three-quarters of dispensaries had at least one prescriber and a similar proportion had at least one nurse (75% and 76% respectively). Furthermore, absenteeism was common in both nursing and prescribing cadres: only about 40% of dispensaries had a prescriber or a nurse present on the day of the survey (41% and 43% respectively).

Table 4 Human resource in all dispensaries and health centres

HUMAN RESOURCES (in all 127 health centres & dispensaries)			Number of facilities	% of facilities	95%C*
Prescribers (Medical Officers, Assistant Medical Officer, Clinical Officer or Assistant Clinical Officer)	Dispensaries	Present	46/113	41%	32.50
		Employed	85/113	75%	66.83
	Health Centres	Present	8/14	57%	29.82
		Employed	12/14	86%	57.98
Nurses (Nursing Officer, Nurse Midwife, Public Health Nurse 'B' or Maternal and Child Health Aides)	Dispensaries	Present	49/113	43%	34.53
		Employed	86/113	76%	67.84
	Health Centres	Present	11/14	79%	49.95
		Employed	13/14	93%	66.100

4.2 Study design

This study largely relies on data from qualitative studies that were conducted before and during implementation of the IPTi effectiveness project and parallel child preventive child health interventions in southern Tanzania, between 2004 and 2007. The study design (Table 5) enabled the three phases, hereafter termed as "data collection strategies for this thesis" namely, (i) a baseline rapid qualitative study (RQS), (ii) a longitudinal acceptability study (LAS), and (iii) an in-depth ethnographic study (IES). Issues relevant to the acceptability study were included in the health facility and household surveys to generate a limited amount of quantitative data, as detailed elsewhere [65, 67].[3] These data collection strategies provided avenues for achieving the study objectives, starting with a pre-intervention study in five districts, followed by subsequent observational-longitudinal and in-depth phases during implementation of the IPTi project.

The study design allowed a comparative investigation of social and cultural factors that influenced the development and implementation of the IPTi strategy alongside parallel malaria and immunisation services for young children.

[3] Quantitative data was not a focus of thesis and hence is only in chapter 8 on pages 2005-6, and in annex 1

The baseline RQS was primarily conducted to facilitate the development of the IPTi strategy. The LAS investigated socio-cultural aspects of IPTi, which reached the community in the context of EPI and other preventive and curative interventions for malaria, particularly for young children. The IES partly overlapped with the LAS. However, the IES sought to gather ethnographic knowledge about the same interventions being studied in the LAS. Data from the three qualitative data collection strategies were analysed and, together with the quantitative data, informed the data analysis in this thesis. An account of the approach used and justification for each source of data collection, processing, presentation and analysis follows next in this chapter.

4.3 Data collection methods

Triangulation of methods encourages the deliberate seeking of evidence from a wide range of different, independent sources and often by different means [189, 190]. This thesis triangulates findings from both three data collection strategies (RQS, LAS and IES) and, as seen in chapter 8, quantitative data helped in the discussion of the study findings. Data collected informed both the IPTi project and this thesis. In collaboration with IPTi project staff and sometimes individually, I participated in study design, training, supervision and data collection. Data collection techniques included in-depth interviews, group interviews, focus group discussions (FGDs), observation and participant observation. The study sites and respondents were purposively selected from each area, targeting both regular and irregular users of EPI services. Initially, all interviews, group interviews and FGDs took place in Swahili. However, in the LAS and IES, we also used local vernacular concepts in both formal and informal conversations with respondents and in so doing, the respondents became more open. Overtime, many respondents become less hesitant in responding, both in individual and group sessions.

The discussions were recorded using MP3 recorders and field notebooks. Voice files recorded by MP3 recorders were transcribed verbatim using computer-assisted software (Olympus DSS Player Pro).

Table 5: Study design

AIM	OBJECTIVES	Data collection strategies	Number of villages	Methods	Respondents	Time spent per village	Type of information collected
To examine socio-cultural perspectives for development, delivery and uptake of child health interventions in rural southern Tanzania	To assess the barriers to and facilitating factors for delivery of preventive child health interventions	RQS	10	FGDs, In-depth interviews, A module in household survey questionnaire[3]	National, regional, district stakeholders, Pregnant women, mothers& fathers of young children, service providers, village leaders, TBAs, CHMT members	2 days	Preliminary data on the perceptions of existing and proposed child health interventions
		LAS	8	FGDs, In-depth interviews, A module in household survey questionnaire[3]	Regional, district stakeholders, Pregnant women, mothers& fathers of young children, service providers, village leaders, TBAs, CHMT members, project implementer , shop keepers	1-2 days subsequent visits every 1-months, over 29 months	Prolonged follow up on community understanding & perception of preventive child interventions and services
		IES	3	FGDs, In-depth interviews, A module in household questionnaire[3], participant observations at community and in the community	DHB members, Pregnant women, mothers& fathers of young children service providers, village leaders, TBAs, CHMT members, project implementer , shop keepers, VHWs etc	2 months	In-depth study of issues addressed in LAS and other information in close contact with service providers, villagers etc
	To assess the barriers to and facilitating factors for uptake of preventive child health interventions	RQS	10	FGDs, In-depth interviews, A module in household survey questionnaire[3]	National, regional, district stakeholders, Pregnant women, mothers& fathers of young children, service providers, village leaders, TBAs, CHMT members	2 days	Preliminary data on the perceptions of existing and proposed child health interventions
		LAS	8	FGDs, In-depth interviews, participant observations at community and in the community	Regional, district stakeholders, Pregnant women, mothers& fathers of young children, service providers, village leaders, TBAs, CHMT members, project implementer , shop keepers	1-2 days subsequent visits every 1-months, over 29 months	Prolonged follow up on community understanding & perception of preventive child interventions and services
		IES	3	FGDs, In-depth interviews, participant observations at community and in the community	DHB members, Pregnant women, mothers& fathers of young children service providers, village leaders, TBAs, CHMT members, project implementer , shop keepers, VHWs etc	2 months	In-depth study of issues addressed in LAS and other information in close contact with service providers, villagers etc
	To analyse the potential and actual roles of volunteer village health workers in delivery of preventive child health interventions	IES	3	FGDs, In-depth interviews, participant observations at community and in the community	DHB members, Pregnant women, mothers& fathers of young children service providers, village leaders, TBAs, CHMT members, project implementer , shop keepers, VHWs etc	2 months	In-depth study of issues addressed in LAS and other information in close contact with service providers, villagers etc
	To elucidate the dynamics of information flow about preventive child health interventions	IES	3	FGDs, In-depth interviews, participant observations at community and in the community	DHB members, Pregnant women, mothers& fathers of young children service providers, village leaders, TBAs, CHMT members, project implementer , shop keepers, VHWs etc	2 months	In-depth study of issues addressed in LAS and other information in close contact with service providers, villagers etc

RQS=Rapid qualitative study; LAS=Longitudinal acceptability study; IES= In depth ethnographic study; [3] Quantitative data was not a focus of this thesis, hence is only in chapter 8 and annex 1

4.3.1 Baseline RQS: Methods

We conducted 52 FGDs and 8 unstructured open-ended interviews with community members and health workers, in 10 villages in the IPTi study districts between September 2004 and January 2005. The villages, purposefully selected, represented areas with both low and high EPI coverage rates according to a household survey conducted during 2004. Selection also considered varied geographic locations including coastal areas, the Makonde plateau, semi-urban and rural communities, those close to and far from referral hospitals and the international border with Mozambique. Village leaders helped to prepare respondents and venues after they were briefed one day before the FGDs [65, 67].

Data for RQS was collected using open-ended interview guides with health care providers, and FGDs with mothers of <1-year-old children and Community Own Resource Persons[The latter are widely referred to in Tanzania by the acronym CORPs, i.e. people who do voluntary work in their community relating to health, politics, religion, agricultural extension work, water etc. In the study areas, traditional birth attendants (TBAs), traditional healers, retired leaders and the influential elders also constituted CORPs]

Under my supervision, a team of eight experienced research assistants conducted FGDs at health facilities, centre of the villages and outlying hamlets within in the same selected villages. The assistants had attended one week's training on the techniques for conducting interviews, FGDs and note taking. Three pairs comprising a moderator and note taker collected data under my close supervision. We recorded all discussions using an MP3 voice-recorder, prepared daily debriefing notes for each interview and FGD, and transcribed all recorded data verbatim. Debriefing notes together with a review of transcribed text enriched the content analysis process, which involved coding of related text under corresponding themes. Annex 1 describes further application of results

including development and pre-testing of BCC materials[69]. The themes for interview and FGD guides included,

- *Perceptions of and experiences relating to vaccination services, malaria and use of SP*
- *Willingness to accept and views on how to implement IPTi*
- *Community understanding of the existing health posters (their clarity in terms of text images and take-home messages to target audiences).*
- *Suggestions for development including pre-testing of the behaviour change communication (BCC) strategy for IPTi including brand name, format, images and captions).*

4.3.2 Longitudinal Acceptability Study: methods

Together with three other experienced project staff, we conducted a longitudinal acceptability study (LAS) between February 2005 and July 2007 in eight villages of the five IPTi study districts (Figure 4: A Map of IPTi acceptability study sites in southern Tanzania). The LAS relied on a network of eight resident community-based informants, known locally as "*Watoa Taarifa*", abbreviated herein as WT. Recruitment of the WT took place in two batches between November 2004 and April 2005, alongside the IPTi project implementation phases (piloting and rolling out in the study areas) [69]. These WT sites provided a platform to study IPTi and parallel preventive child health interventions in a holistic approach that allowed understanding of other socio-cultural, economic and political issues affecting matters relating to the health of pregnant women and young children.

Logistics for Longitudinal Acceptability Study
We initially explained the project activities to regional and district health authorities, the study objectives, approach and introduced the study team to CORPs in the study areas. Village leaders helped to mobilise the initial sensitisation and recruitment meetings with CORPs and potential women in the study villages.

Selection, training and roles of community-based informants
Following the initial sensitisation meetings and using the local process of advertisement, we circulated advertisements inviting eligible female applicants with specified personal attributes to apply in writing for a post of WT. The advertisements were displayed at meeting places such as religious buildings, dispensaries, markets, village offices and local shops. In addition, a resident village crier [*mpiga mbiu*] also went around the village to announce in the manner that was popular in communicating urgent news in the villages. The essential requirements included permanent residency in the area, ability to interact with women of all age groups, self-confidence, writing and reading skills as well as being pregnant or a mother of a baby under 2 months old.

On the day of recruitment the CORPs ranked the applicants, before they participated in FGDs (without the CORPs) where we assessed their interpersonal communication skills and literacy by involving them in role-plays and writing personal demographic information as well as their retention of key messages within the FGDs. We then matched the scores from the CORPs ranking and the FGDs to select one informant and one reserve candidate.

Each of the selected informants (WT) then received on-site training on the same day and during subsequent sequential "round" visits every 1-2 months. The WT learned the skills for making systematic observations including listening, conducting informal interviews, and making notes of their observations. The WT received notebooks and pens for documentation of events related to children and pregnant women in the community. The age of selected WTs ranged from 20-40 years, six were married; one had incomplete

secondary school education while the others had completed primary school. The project paid approximately $25 per month to each WT following the example of other projects in the area.

As local participant observers, the WT recorded and participated in individual interviews and in FGDs. The WT reported information from interactions with other community members in their daily life on matters relating to the health of pregnant women, young children and relevant service utilisation in their areas. Moreover, the WT helped in mobilising other villagers, particularly for FGDs or individual interviews at convenient places in the community. With support from local leaders and fellow women whom they selected amongst their own communities, the WT enabled detailed, long term, participant observation of health behaviour and the spread of information about various health interventions. Consistent with experience from Uganda [191], the WT's role enabled the collection of detailed, first-hand data on practical situations that would otherwise have been difficult to assess [28].

In total, we conducted eight rounds of visits to the LAS sites, in which we conducted a total of 70 debriefing interviews with WTs as well as 96 in-depth interviews and 44 FGDS with pregnant women, mothers of infants, health workers, local leaders and other community members. The interviews and FGDs were flexible, allowing continuity of similar themes and identification of new ones. As detailed in the next section (data analysis for LAS and IES), daily debriefing notes and round, overviews contained key findings, which informed preparation of interview and discussion guides for successive round visits.

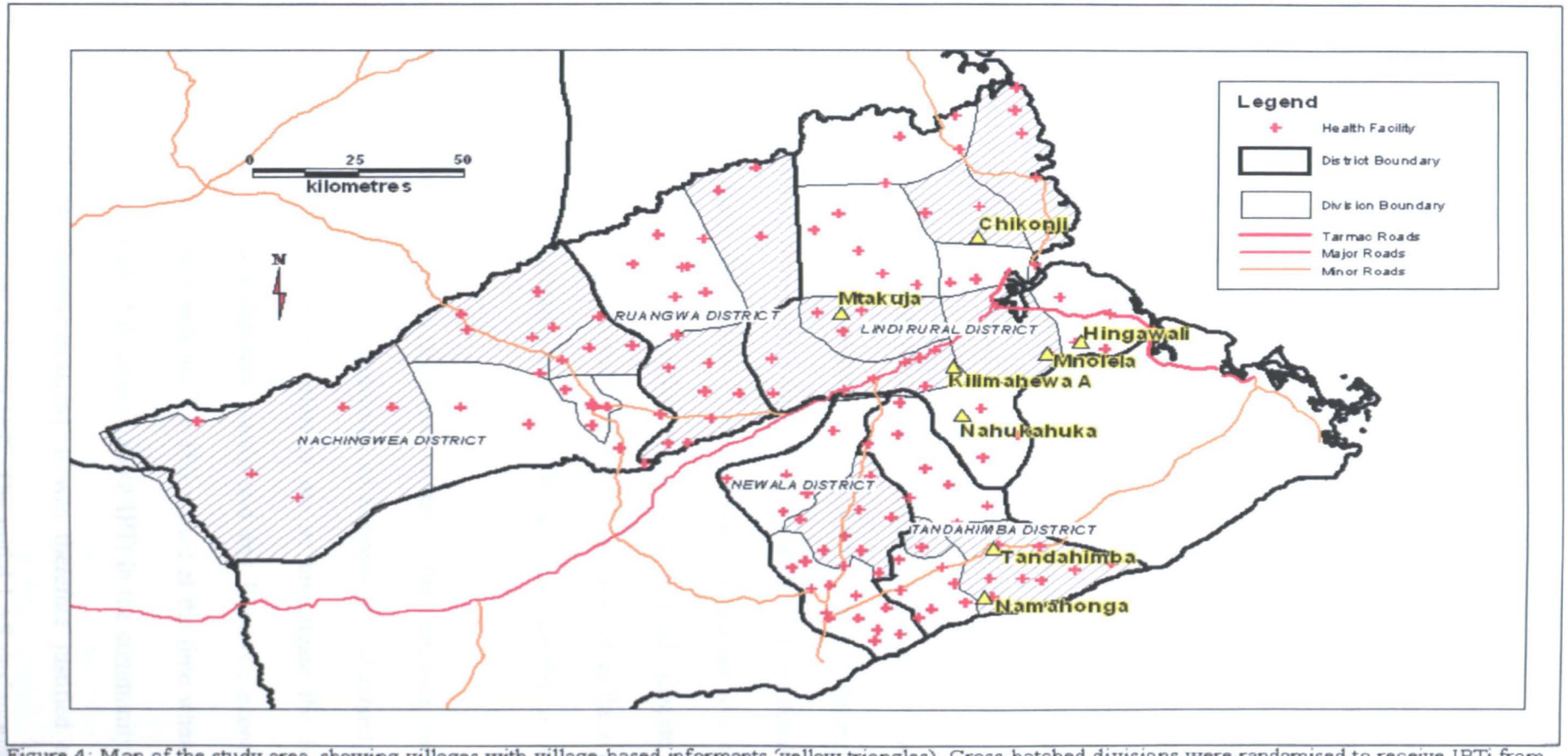


Figure 4: Map of the study area, showing villages with village-based informants (yellow triangles). Cross-hatched divisions were randomised to receive IPTi from 2005 while the remainder received IPTi from 2007.

4.3.3 In-depth Ethnographic Study

According to Silverman (2004:305)[192], "Ethnography puts together two different words: "ethno" means 'folk' or people while "graph" derives from 'writing'. Ethnography refers, then, to highly descriptive writing about particular groups of people". An ethnographic study enables a researcher to observe things as they happen in practice. Ethnographic studies adopt a holistic approach to understand the social world from both an emic (native) and an etic (viewed from outside of the target culture) perspective [193]. The emic perspective in this study comprises the views of health care providers, community leaders, shopkeepers, mothers and fathers of young children as well as pregnant women in the study areas.

I conducted an In-depth Ethnographic Study (IES) from September 2006 to mid 2007, in three villages within two IPTi project districts. Two of these villages were among the eight IPTi acceptability study sites. I decided to include KN village despite it not being an IPTi acceptability study site because I had observed many clients who sought preventive services for their children at Tandahimba district hospital, despite having a local dispensary in KN. The IES involved a prolonged engagement in the social and cultural setting in which IPTi implementation was taking place parallel to other child health interventions.

Prolonged engagement allows a researcher to stay in the field long enough to establish trusting rapport with the study community, as a means to understand the phenomenon being studied.[194]. The IES also allowed me to investigate the issues relating to information flow, including rumours, gossip and any linguistic expressions related to preventive child health interventions. The IES started at the time when the LAS results had indicated almost a lack of discussion about IPTi in the community both within and beyond the IPTi intervention areas[28]. It was therefore justified to seek in-depth knowledge about information flow for IPTi. The initial LAS design minimised contacts

with health facilities to reduce the possibility of influencing the respondents if they associated our qualitative research team with IPTi implementers. Thus, the IES allowed a closer interaction with service providers and community, within and outside the health facilities, in a way that was not possible in the data collection strategies (RQS and LAS).

Participant observation

During IES, I applied participant observation skills during my prolonged stay in three villages. In close collaboration with a WT and sometimes independently, I visited various places including households, EPI clinics, traditional healers and birth attendants. I also participated in other social activities, such as fundraising for school construction, fetching water from communal sources, attending funerals, and health education and child weighing at RCH clinics for observation, individual or group interviews depending on the circumstances. At home, respondents were asked about personal experiences as their children reached the age of starting to receive IPTi and other preventive interventions. The home visits also facilitated observation of RCH cards and drugs stocked at home from shops or health facilities. The RCH cards not only helped to track the age and services received or missed, but also re-shaped observations as well as discourses with mothers and care providers on barriers to and facilitating factors for utilisation of preventive child health interventions.

During IES, I stayed in three villages for a prolonged time while observing, listening and recording things as they happened. In total, I spent four months, divided into periods of one month in each of the study villages. These months added to over three years of subsequent visits in the study areas throughout data collection activities for the main study, of which this thesis forms a part. Prolonged stay in a few areas enabled me to be well accepted by study respondents, and hence gain a deeper insight into how and why the respondents interacted both at health facilities and in the community.

Setting up the IES

I consulted village leaders at the beginning to seek their consent for a long stay in their areas to work as a resident participant observer in following up the issues related to mother and child health.

Key themes in the IES

The participant observation processes led me to study more issues with more respondents that had initially been anticipated. Issues only arose during my prolonged stay, such as unofficial and official user fees on child health interventions, local politics and mistrust, and the roles of VHWs. These issues emerged clearly in ways that allowed me to observe and discuss them with villagers, health workers and district level managers. The IES also provided an opportunity to interact with district level officials in their districts and other settings where other issues also arose.

During IES, I was also able to investigate the following originally proposed themes for IPTi study:

- *How do mothers, other community members and service providers discuss IPTi in relation to other child health interventions? Any good things about it, any feeling of anxiety, gossip, rumours, metaphors or other linguistic expressions?*
- *How do participants see the role and value of IPTi and other child health interventions?*
- *How do health workers perceive the addition of IPTi and other child health interventions into their routine activities? Is it worth giving or not?*
- *Does the addition of IPTi and other interventions influence the provider-client relationship, and the diagnosis as well as treatment of malaria in children in general, e.g. use of health workers guide, posters etc.?*
- *What kind of questions do mothers and health workers ask about IPTi and other child health interventions?*

- *Do health workers give any explanations to mothers during EPI and malaria treatment?*
- *What messages do mothers remember about IPTi and other child health interventions?*
- *What are preferred sources of information and why?*
- *What are the perceptions of parallel interventions (EPI, ITNs, IPTp, IPTi and other interventions aimed at pregnant women and young children)?*
- *How do mothers receive these different interventions, and which do they think are effective? Would they change behaviour?*
- *Do mothers consider there is no need to rush to hospital because they are protected by these interventions or would they not use any of these interventions?*
- *What do mothers or health providers do if a child gets ill despite using preventive interventions such as IPTi, EPI and ITNs?*
- *Where is treatment sought and why?*
- *Investigating explanations of perceived health risks and reasons for using or not using preventive practices during pregnancy and early infancy and studying how they enhance or hinder compliance to other health interventions.*

In total, during IES, I recorded 121 brief and in-depth interviews, FGDs and observation sessions in the following categories: interviews with mothers at RCH clinics, at home and in the paediatric ward (72); fathers/grandfathers (5); VHWs (6) and FGDs/group interviews with fathers, mothers and women's leaders (5). Additionally, there were observations of service providers and client's interaction at health facilities (10), health officer, public health nurses and nurses assistants (6), clinical officers (2), DMO/DCCO (4), retired civil servants (2), village leaders (4), TBA (1), health board members including a chairperson (3) and senior nursing officers (2).

4.3.4 Data analysis for LAS and IES

Including a description of the process in the presentation of results plays a key role in assessing the quality of a study. Otherwise, this lack of detail makes it impossible for readers to judge the adequacy of the qualitative research method [192]. In line with the grounded theory approach, data analysis for this thesis was an integral process throughout the three qualitative data collection strategies for the study (RQS, LAS and IES). Grounded theory involves three stages: an initial attempt to develop categories which illuminate the data; an attempt to 'saturate' these categories with appropriate cases, in order to demonstrate their relevance; and trying to develop these categories into more general analytic frameworks with relevance beyond the setting[192].

Summaries of each interview or FGD and daily work were prepared based on manual analysis, followed by verbatim transcription of recorded voice files and translation of selected interviews. The summaries provided key feedback within the IPTi project team for consideration in the implementation. Moreover, the summaries also informed preparation of round overviews at the end of every round of visits to WT sites. The round overviews contained key findings and highlights that informed preparation of interview/discussion guides for successive rounds. The round overviews and notes from verbatim transcriptions from original interviews and discussions were imported in NVivo 2 software for coding and analysis under broad and sub themes according to study objectives and emerging themes.

In the process of coding within NVivo 2 software, I created journals and memos that initiated the writing up process. The coding process also allowed the recording of key findings and issues requiring further attention. Fundamental roles of NVivo include supporting and manipulation of texts or documents; and it supports the creation and manipulation of codes, known in NVivo as nodes. Among other functions, NVivo also provides tools for creating and examining new ideas about the data[195]. Data presented

in this relied on both manual and NVivo software assisted analysis that generated categories the form of single text searches, single nodes and combined searches.

4.3.5 Quantitative data source

As already earmarked on page 54, this study included limited quantitative data, although it was largely qualitatively designed. Information about quantitative data collection strategies referred here is detailed elsewhere, in the papers published in peer-reviewed journals [65, 67]. Briefly, the quantitative data source for this study included a modular questionnaire and household surveys conducted in within a framework of IPTi project in the study areas during 2004-2006. Specific questions on community and service provider perceptions and awareness about SP and information flow IPTi were included in a larger household survey conducted in five districts during 2006.

As well as information on the structure and function of the health system, one module of the modular questionnaire administered to health workers at all 136 government, NGO and private health facilities (including hospitals, health centres, and dispensaries) in the five districts, included questions to evaluate the health worker's perceptions of SP for treatment and prevention of malaria.

Questionnaires were processed using a double data entry system in DMSys software (SigmaSoft International, Chicago, IL, USA http://www.sigmasoftintl.com). Data were checked for logical consistencies, completeness and quality and then summarised according to a pre-defined analytical plan using Stata 8.2 (Stata Corp LP, College Station, Texas, USA).

4. 4 Ethical considerations

This thesis was undertaken within the framework of the main study on assessment of the community effectiveness of IPTi, part of the IPTi Consortium [27]. The study received ethical approval from the local and national institutional review boards (Ifakara Health

Research and Development Centre, Ifakara, and the National Tanzania Medical Research Co-coordinating Committee) through the Tanzania Commission for Science and Technology. In addition ethical and research clearance were also obtained from institutional review board of the London School of Hygiene and Tropical Medicine, UK, and Ethics Commission of the Cantons of Basel-Stadt and Basel-Land, Switzerland. During fieldwork, information sheets in Swahili about the study were given out, explaining why it was being done, by whom, and what it would involve. In the household survey, written consent of all household heads was sought. Confidentiality of all study participants was assured. In qualitative data collection strategies, verbal informed consent was sought from participants before interviews, focus group discussions and taking photographs. The consents were recorded using a digital recorder at the beginning of each session, after introducing the recorder and reasons for using it. All digital recordings and transcripts were stored on secure computers to which only project staff had access. Recordings were deleted from recorders once they had been uploaded. All participants were identified through identification numbers.

Data presented in this thesis does not specify the names of health facilities, villages or respondents. Instead, I use different acronyms, a place, or a respondent anonymously.

Chapter 5

Facilitating factors and barriers to delivery of child health interventions

5.1 Introduction

This chapter presents data on the key barriers to delivery of preventive child health services in rural southern Tanzania. The focus is on health facility-based interventions, particularly those delivered through RCH and outreach clinics as well as special village health days and campaigns. The key preventive interventions addressed in this chapter include IPTi, EPI, IPTp, ITNs and Vitamin A as well as subsidised and free mosquito nets. Facilitating factors and barriers for service delivery are presented separately. These two categories are split into several sub-themes. This chapter ends with a discussion of the findings.

5.2 Facilitating factors for service delivery

These are split into infrastructural, provider attitude, community involvement, and management and supervision, all of which can be described as facilitating factors for service delivery.

5.2.1 Infrastructure and location of health facilities

All my data collection strategies suggested that preventive services reached the intended users through government and non-government health facilities, including hospitals, health centres and dispensaries. All hospitals and health centres as well as most dispensaries in the study districts had refrigerators for vaccines. There were also some outreach posts at village government offices for routine immunisation and growth monitoring services. During campaigns, we observed that some villages had additional locally determined service delivery points such as in schools or under trees. Generally, the location of the health facility was an important facilitating factor for service delivery.

From discourse with service providers and my own observations, the health facilities and shops located at district headquarters and along the main tarmac roads had relatively better availability of preventive health services than remote health facilities. My own observations as well as health service provider's interviews suggested that a district hospital had shorter periods of vaccine stock outs than other health facilities in the district, even at times of critical shortage. District hospital RCH clinics also had discount voucher books in stock at times when these were out of stock at the dispensaries. Moreover, I observed that the district hospitals had regular electricity and standby generators to support the cold chain. I also observed that shops in the district headquarters and those along major roads had better supplies of mosquito nets than those in more remote areas. Similarly, health facilities located along the main roads had better stocks of discount vouchers for nets than the more remote facilities, and they managed to deliver immunisations in cooperation with nearby hospitals, which were better equipped. For example, the PHN at a dispensary along a tarmac road and near a hospital reported that she used to get supplies using a cold box from a nearby mission hospital when a refrigerator at her clinic malfunctioned.

5.2.2 Provider attitude

Mothers gave me names of service providers who had good attitudes, including a new PHN at a health centre, a midwife at a dispensary, an elderly PHN at district hospital clinic and the NA at a dispensary in the ethnographic study site. For example, the WT at a dispensary in the ethnographic study site reported how their NA attended her at home after she had a miscarriage, and her husband had failed to persuade the PHN who lived in the same village to come. The same NA also attended patients and women in labour both day and night after she had completed routine services at EPI and ANC, and sometimes at OPD during working hours.

Some of these reportedly friendly service providers confidently explained to me how they handled their clients. The new PHN at village 6 and another one at village 7 referred to gifts from mothers including vegetables and other produce as indicators of community appreciation of their services. The elderly PHN at hospital 1 told me how she had learned through experience to talk to mothers politely despite their lack of education.

> *"I behave like a grandmother to these young mothers. We joke and I never blame them because I know that many of them never went to school. Handling mothers and other patients requires patience, unfortunately a new generation of nurses doesn't care about that." (An elderly PHN at district hospital clinic)*

Provider attitudes towards interventions

The NA at one dispensary commented that she enjoyed administering vitamin A because it was easy. VHWs at vitamin A supplementation campaign posts also told me that administering vitamin A was easy and not time consuming. I observed in the vaccination rooms at both dispensary and hospital RCH clinics that providers administered vitamin A to most eligible children, although little documentation took place. The NA said she wished all interventions were as easy to administer as vitamin A, not requiring a provider to worry about cups, spoons and WaterGuard, as with IPTi. Some mothers, in individual interviews and FGDs, also expressed their concerns about the lack of hygiene from shared cups and spoons for administering IPTi and IPTp, fearing the spread of infections.

Services providers were also positive about discount vouchers for mosquito nets. The HO at the district hospital clinic and the NA at the dispensary both praised the organisation of discount voucher training, partly because in addition to training and allowances, they received pairs of *"khanga"* for themselves and a few more to share with their fellows who did not attend training.

"After handing that present of khanga (pieces of cloth) branded "Hati Punguzo"[4] to my VHW who did not attend the seminar, she felt happy and I have seen her always working hard to issue the vouchers. The VHW to whom I presented that Khanga commended the workshop organisers for valuing even those who missed a chance to attend." (NA)

Provider attitude towards working conditions

Some providers told me they were initially happy to work at the health facilities regardless of the geographical location. It seemed that the NA's were more inclined to cope with the working environment than trained nurses and clinical officers.

"I have worked at this dispensary for many years now and we have managed to build a family house and at the same time have acquired the land where we grow various cash and food crops to supplement my income." (NA)

In contrast, the trained nurses and clinical officers were less willing to stay in remote areas. The newly posted CO at the dispensary **1** and a newly posted young PHN at health centre **6,** a remote area, said that they were determined to stay only temporarily. The CO had accepted a transfer despite not liking the place due to the housing and water shortage. The same CO hinted that he would shortly be joining a higher learning institution to get higher qualifications that he believed could help him to work in places of his own choice. Likewise, the new PHN at health centre **6** hinted that her influential relative on the district council would arrange for her to be transferred to a better-located facility where she could have access to transport and other facilities in town.

"For the time being, I am working here and really trying hard to impress my leaders. Since I would like to advance my career, I had to work here initially despite not liking the place. It is very costly to follow salaries in town and there are no evening classes (part time training). I am glad that my "mother" has talked to someone in town who has promised to transfer me to a better located health facility so that I can continue studying on part time basis." (PHN health 6)

One PHN reported that the district nursing officer (DNO) had transferred her to a remote dispensary because they were equally well qualified and thus the PHN was a threat to the DNO. Despite this, the PHN liked her placement. She said that local leaders and the entire

[4] Hati Punguzo is a Swahili translation for Discount Voucher.

community gave her tremendous support: in collaboration with village leaders, she had prepared a daily service delivery timetable that several mothers appreciated. Moreover, some villagers gave her food and others fetched her water.

5.2.3 Community involvement

Community involvement played an important role in facilitating the delivery of preventive health interventions in the study areas. VHWs, community leaders and retailers served at both community and health facility levels. As detailed elsewhere in this thesis (see chapter 7), the VHWs supported the provision both of routine services and mass campaigns. For example, an experienced VHW at the dispensary 1 often vaccinated children both at the dispensary and outreach clinics, either alone or with a salaried service provider.

From observations of the health campaigns, village leaders and VHWs worked alone or with health professionals, registering children before and during service delivery. They administered vaccinations, mebendazole tablets, and mosquito nets while others weighed children.

The local retailers served as discount voucher agents who delivered both unsubsidised and subsidised mosquito nets across the study areas. Some of them supported the introduction of discounted nets for children in the same form as for pregnant women. They also initially supported free ITNs because their children and relatives also benefited. However, after a campaign involving free net distribution to all under-fives, some retailers felt that the same government had betrayed them.

> *"Imagine discount voucher agency accounts for more than 65% of my business now, with most of my capital in it. I wonder if the government will give me a loan to do another business while my capital is not in circulation." (Discount voucher agent village 6)*

5.2.4 Management and supervision

From interviews with project implementers, professional and non-professional service providers and my personal observations, it appeared that specific projects or programmes and campaigns were much better organised, coordinated and managed compared to routine services. Throughout the acceptability and IES phases of this study, I met the staff from the national discount voucher programme for ITNs and the IPTi project implementer, who had been following up the implementation of their activities at health facilities, either alone or with CHMT members as part of routine supervision visits. These staff also conducted on-the-job training and sometimes helped to deliver supplies. One explained to me what motivated him:

> *"Three things motivated me: 1) encouragement from my bosses. At the time of my recruitment, one of them told me that there were about 40 applicants for my post but they appointed me. That led me to feel very competent with a big name. Therefore, I had to work hard in order to maintain my reputation. 2) Working tools: I had all equipment needed, including reliable transport, drugs, cards etc. These made me feel confident whenever I visited health facilities because I knew that I had all that I needed to carry out my work. 3) Remuneration: I was well paid compared to my former job." (Project/programme staff)*

Supportive supervision by these staff also contributed to better performance among service providers. Service providers at health facilities acknowledged both routine and unscheduled supportive supervision visits from an IPTi implementer and they felt obliged to work hard.

> *"I must admit that without his close follow up and good instructions I would not manage to keep good records for IPTi. That is why I do not want to disappoint him when he comes because he will check records and count each tablet for IPTi to see if everything is OK. Our supervisors (from CHMT) do not have such time to inspect every detail." (NA)*

During mid-2006, the CHMT members from five intervention districts attended a feedback meeting in Mtwara, organised by the IPTi research project. The CHMT members were surprised to see evidence of missed opportunities for IPTi, whereby children attended clinic and were given vaccinations but were not given IPTi. The CHMT

members agreed in the meeting to improve the situation. Two months later, one of the DMOs informed the project implementer and me in an informal talk that the feedback meeting had empowered him to challenge those who perform supervision visits to act carefully. Seemingly motivated by a desire to be a model district, the DMO said,

> *"After that meeting I instructed my (CHMT) to inform our workers at health facilities to ensure that no child leaves the health facility without getting the due vaccinations and IPTi, if available. Moreover, any CHMT member going to the villages should take supplies. Those who conduct supervision visits should remind our midwives to keep proper records both on RCH cards and in MTUHA, so that our district becomes a model when the researchers go to facilities and households next time." (DMO)*

Service providers at health facilities also changed their behaviour due to the influence of the research team. The researchers had been checking the RCH cards during household surveys, in-depth interviews and FGD sessions in the community, and health workers saw me observing the RCH cards as well as hearing from FGD participants that we were checking RCH cards. Then during my second phase observation at TH clinic, I found that service providers had accumulated the piles of RCH cards at the clinic in order to reconcile the records of vaccinations and IPTi on RCH cards and MTUHA books. In the course of my observations at TH district clinic, the PHN showed me an RCH card and commented,

> *"You will like our cards nowadays because all dates of vaccination are well marked and children are getting IPTi".*

Thus, the local health workers improved delivery practices after they indirectly or directly knew that someone was following up both at health services and in the community. As detailed later (chapter 8), service providers also improved behaviours in conducting health education, record keeping and the provider-client relationship when they were aware of researchers' presence.

5.3 Barriers to service delivery

The CHMT members, project staff and service providers at health facilities reported facing various managerial, technical and logistical barriers to effective delivery of child health interventions in the study areas.

5.3.1 Management and supervision

CHMT members had little motivation to conduct supervisory visits and deliver the available supplies to health facilities due to delays in getting their allowances and transport problems, including vehicle breakdown or lack of fuel. It was sometimes several months before allowances were paid. These poorly motivated CHMT members conducted superficial supervisory visits. There were large discrepancies between planned and actual outreach clinics and difficulties in handling issues such as provider absenteeism, technical and logistic failures.

During participant observations at the district hospital, clinics were often overcrowded, and clinic and service providers complained of their heavy workloads. As shown in this chapter, there were also challenges such as critical absenteeism and no coordination of vehicle use in the CHMT or district hospitals.

5.3.2 Technical and logistic failures

For over 2.5 years of follow-up through LAS and IES (2006-08), cold chain equipment operated smoothly in most health facilities of district 1, except in dispensary 4. In contrast, in most of district 2, technical problems with the cold chain facility and logistic failures disrupted vaccination services during the same period, according to mothers, the DCCO, the project implementer my observations at clinics.

Group and individual interviews with mothers from six remote villages, suggested that they were seeking services at the district hospital because their local dispensaries had technical problems with the cold chain and logistic failures, including shortage of gas,

electricity and occasional shortages of vaccines, clean water and discount vouchers for subsidised mosquito nets. The illustrative examples 1 and 2 below, present the experiences and views of mothers and fathers of young children as well as service providers from two villages (village 3 and village 4), each with a government dispensary equipped to provide RCH services, who sought immunisation services at district hospital 2, over 12 km away from their villages.

Illustrative example 1: Logistic failures and effect on the cold chain at dispensary 4

Mothers from village 3 indicated in a group and individual interviews at district hospital 1 that their local dispensary had not been running vaccination services for a couple of months. They thought that the electricity supply had been cut due to unpaid bills, so the fridge was not working.

A female NA from dispensary 4, whom I interviewed at the district pharmacist's office, confirmed that the Tanzania Electricity Company (TANESCO) had disconnected power from the dispensary between November 2007 and March 2008, due to unpaid bills amounting to Tshs 13,000 (~US $13). She also said that there had been no gas to run a refrigerator at her dispensary during the same period. Our follow up at the district TANESCO offices verified that the electricity at dispensary 3 was disconnected between December 2007 and February 2008, due to an outstanding bill amounting to TSH 9,158 (~$ 9).

The NA and mothers from dispensary 3 reported that after power was disconnected, health workers shifted their vaccines to a dispensary called LT (~15km away). However, this dispensary later experienced a shortage of vaccines.

> *"Mothers returned, complaining why we referred them to LT while we knew that their babies were going to miss vaccines." (NA, from dispensary 3)*

The NA was aware the DCCO planned to supply gas to run the fridge. However, she thought the DCCO had not managed this because either there was no transport from the district or gas was out of stock at the district level. When interviewed, the DCCO mentioned a gas shortage in the whole region, and that vaccine stock outs were a major constraint in the delivery of preventive services at health facilities in district.

Illustrative example 2: Technical and logistic failures in the cold chain at dispensary 4

On different days, I observed several mothers from village 4 who brought their children to TH district hospital for immunisation and treatment services. The RCH cards showed gaps, which suggested that those children had overdue vaccinations and corresponding doses of IPTi. These mothers said there had been no services at dispensary 4 in the previous months. This encouraged me to visit village 4 for FGDs and interviews with parents of young children. Both fathers and mothers of young children confirmed the lack of vaccination services but they did not know why. The majority of fathers commented that they usually encouraged their wives to take their children to the district hospital whenever services were unavailable at their dispensary.

A female nurse at dispensary 4 confirmed in a separate interview that for more than a month, there were no EPI and IPTi services due to a lack of gas to run the cold chain equipment as well as an infestation of bees.

> *"Soon after we received the long awaited gas, we still had to suspend vaccination services because the bees had invaded. Although our midwife informed the DCCO, it took about two weeks before some people from the district bees' office came to evacuate the bees. The DCCO just brought this small refrigerator [pointing at one in vaccination room] yesterday to replace the old one, after realising that the bees had damaged it. I hope vaccination and IPTi services will resume tomorrow." (Nurse at dispensary 4)*

I mentioned the situations in illustrative examples 1 and 2 above in informal discussions with a district health board (DHB) member and a district education officer in district 2.

The DHB member said that he was not aware of the events and promised to raise the matter in the following board meeting. The education officer blamed the district council's management system for contributing to logistical failures in the delivery of social services such as education and health in the district. He thought that too many district officers were involved in minor issues such as in approving payments for minor repairs at schools and health facilities instead of delegating power to local board members who existed at all health facilities and schools in the district.

> *"In my opinion, it is possible to avoid some complications. Why should dispensary bills wait for the approval of DMO, DED and the District Accountant? If mandated, the In-charges of health facility could handle such matters in close collaboration with local leaders because they knew their people's needs better than anyone else. Similarly, it is wrong for children to miss immunisation services because of delays in bees' evacuation. I know some old men there (at village 4) and I think you have seen them selling honey in our streets. Such people could remove the bees from their dispensary within a few minutes just like a simple game as they normally do while harvesting the honey." (District Education Officer)*

There were shortages of vaccines in TH district at the end of 2006/7 according to interviewed service providers and mothers. The shortages affected dispensaries, health centres and even the district hospital clinic at times. Usually, mothers from remote areas sought vaccinations at the district hospital when they thought there was no vaccine supply at lower level facilities. On some occasions, however, the vaccines were in short supply even at the district hospital clinic, which was always the first point in the district for receiving supplies and distributing them to health centres and dispensaries. The DCCO maintained that the shortages were sometimes a national crisis:-

> *"There is nothing I can do when the RCCO says that the region has not received vaccines from the national level."*

Service providers, mothers and shopkeepers also reported occasional shortages of discount vouchers for subsidised mosquito nets at health facilities. However, service providers blamed mothers. For example, during participant observation at one dispensary,

I saw the NA blaming a mother for delaying to collect a discount voucher. The mother responded that she had earlier asked for a voucher but the former VHW said they were out of stock. However, the NA aggressively accused the mother of negligence because she had not returned to clinic for the voucher while she was pregnant. Sometimes, it was difficult for mothers to keep money they had saved until they had a voucher.

> *"During my pregnancy I brought enough money for topping up at the shop apart from total amount of Tshs 500/= which should remain with someone who issue the voucher, according to how the former VHW instructed me. Unfortunately it was not easy to keep that entire sum due to other needs, and it took time before my partner gave me the money which I brought today." (Mother at dispensary 1 clinic)*

Constrained outreach clinics and limited roles of VHWs

Delayed allowances to service providers, shortage of qualified staff, transport and weather affected the delivery of child health services through outreach clinics. Summarising information I received from one DCCO, from January 2006 to May 2007 only 46% of the planned outreach clinic visits took place (250 of 540 planned), and just 9% of the planned mobile clinics (6 of 68 planned).

During LAS, we met an elderly PHN carrying cold chain supplies on her way to the outreach clinic (Figure 4). She said that it was normal to carry the supplies because there was no other means of transport except during campaigns, when the cars took supplies and supervisors from district level. The dispensary had no car and the road was too sandy to use a bicycle. She felt that her salary was particularly low given this difficult environment. During IES at the dispensary 1, both salaried workers and VHW said separately that mothers were supposed to go to the dispensary if it rained on their planned day of outreach clinic.

> *Any health department employee [from dispensary, health centre or hospital] who goes out for outreach clinic is entitled to an allowance amounting to ~$ 7.5 per day. However, we are disappointed because it takes too long to get reimbursements. Moreover, our seniors in the district promised us bicycles for outreach trips but up to now we have not seen any." (PHN at district hospital 1)*

During observation in the paediatric ward at TH district hospital, I noted that 11 out of 14 admitted children under one year old had incomplete immunisation records on their RCH cards. These 11 children came from distant villages of both TH and Mtwara rural districts. Eight of them had RCH cards from MKN and KTN clinics. Interestingly, nearly all children in the paediatric ward had records of monthly weights on their RCH cards, suggesting that they had regular monthly growth monitoring services. Mothers said that VHWs had weighed children in the villages.

> *"Those [VHWs] who weighed my child at village 12 village [along Ruvuma River] did not tell me that I should also take him to clinic for vaccination. I also did not know when to take my child to clinic because the date of next vaccination is not marked on the card." (Mother in Paediatric ward, TH Hospital)*

Figure 4: A nurse walking to an outreach immunisation post

5.3.3 Delays in service provision

In the study area, many service providers delayed provision of immunisations for reasons including a shortage of qualified personnel, absenteeism and fear of wasting vaccines.

Mothers reported in the FGDs and individual interviews and I observed that qualified nurses at the HM district hospital, as well as the NA and VHWs at a dispensary, on several occasions weighed babies and asked their mothers to bring them back, most frequently on Fridays, which was a popular day for measles vaccination. Delays were common even when vaccines were in stock. After weighing, these providers retained the RCH cards on condition of giving them back to the mothers if they brought their babies back for vaccination on another day. I also confirmed through observations the claims by mothers in FGDs and interviews that sometimes they took their children back to clinic on re-scheduled days but still children missed immunisations. A married woman, aged 25, reported in an interview at home in TH that she and other women had taken their children to the clinics on a re-scheduled date which was a public holiday and the clinic was closed.

I also observed the piles of RCH cards in the vaccination room at the district hospital clinic where a PHN also mentioned they would be given to mothers upon bringing back their children to clinic. *"Without retaining cards they may not come back because not every mother knows the importance of immunisation." (PHN)*

Illustrative example 3: Widespread vaccine postponement due to fear of wasting

Service providers sometimes turned children away from clinics because they were few in number, because vaccinating them would waste unused vaccine in the same vial.

One Friday, I heard a nurse at dispensary 1 telling a mother of a nine-month-old boy who had waited for her child's measles immunisation to go back home and try again on

another day when there might be enough children to allow opening up a vaccine vial. In a follow-up interview on the way from the dispensary, the mother claimed that it was not the first time she had experienced such delays.

> *"I am not happy with what she [NA] is doing to my child. I brought him on 19/02/07 [third week of the last month] for 9th month injection [measles vaccination] but she claimed that there were no other children. Having wasted my time to come and wait here, she has asked me to try on Monday next week." (Mother at dispensary 1)*

The NA continued to delay vaccinations although her DCCO had warned about mothers not attending on re-scheduled dates.

> *"If you look at some days like today, only one child came for measles vaccination and three for DPT. I have told their mothers to try next Monday when we may get more children from other two villages that depend on our dispensary. I would have wasted vaccines if I vaccinated such a few children. For example, BCG cannot be stored once opened. If you vaccinate one child daily, it means 30 vials after one month. Yes, you can go for more at district office, but you will have caused a loss to the Government." (NA)*

A PHN at the district hospital clinic and the Project Implementer suggested a widespread habit of vaccination postponement across all five districts.

> *"We are not vaccinating children today [Thursday] until tomorrow [Friday], our day for measles vaccination, because we expect many mothers to come according to how we remind them always. We do not want to open the vials daily; otherwise, we will be wasting the antigens if there is only one child." (PHN)*

> *"In one meeting with RCCO and DCCO region 1, the national EPI coordinator discouraged the habit of postponing vaccinations due to fear of vaccine wastage because there was evidence that the habit was not helpful. In fact, the waste rate had increased contrary to previous assumptions. Furthermore, some mothers might not bring their children back after vaccination postponement." (Project Implementer)*

Shortage of qualified health personnel

There was a shortage of qualified employed personnel in all study areas, which respondents associated with delays in service provision and with provider behaviour in general. The problem of human resource shortage was not unique to health, occurring in other civil service departments as well. In a religious farewell ceremony to a former RC

from one of the regions, the outgoing commissioner and another from the neighbouring region condemned a historical stigma about Mtwara and Lindi regions as places for posting employees as punishment. A local journalist later informed me that the outgoing RC had initiated an advocacy strategy through the media to promote the areas as suitable ones to invest and work in because there was a breakthrough in transport and other opportunities. The RC cited a new tarmac road and increased air services as historical achievements. Nevertheless, the local journalist and various government employees cited the rural areas of Lindi and Mtwara as highly unattractive to new employees because of the lack of transport, good schools and affordable health services.

The shortage of service providers prevented some health facilities from providing preventive services even when the physical infrastructure was available. A DCCO reported during May 2007 that seven dispensaries in his district lacked qualified staff to provide immunisation and other RCH services. A councillor and the District Health Board Chairperson also mentioned some of those dispensaries. They blamed the administrative system at the national and district levels for failing to recruit enough staff. Some mothers in individual interviews and FGDs sympathized with the behaviour of postponing immunization because the providers were few and had heavy workloads.

Coping with the workload

A female PHN at dispensary 7 in TH district said she had introduced a weekly timetable for preventive and curative services in order to manage the workloads. Mothers at this clinic knew the schedule as follows: Mondays and Fridays – child immunization; Tuesdays and Thursdays – ANC clinics; and Wednesday – outreach clinics.

> *"Without a known schedule for provision of different services, I will get mad because I am alone here. I have to provide health education besides attending patient's daily needs and keeping daily records in different MTUHA[5] books. I also*

[5] *MTUHA is a Swahili abbreviation, which represents HIMS (Health Information Management System).*

prepare monthly reports. I explained that plainly to supervisors from the district that if I vaccinate children daily, I would jeopardise my work performance, by making mistakes because of confusion. The DNO agreed with me. Even mothers know that I will be hard to those who come against our schedule, unless there is an emergency. I may change that schedule if the district allocates another worker with whom I can share tasks." (PHN at dispensary 7)

Illustrative example 4: Provider absenteeism at a district clinic hospital

The interviews, FGDs and my personal observations revealed frequent absenteeism at both a dispensary and the district hospital where IES took place. Absenteeism affected both preventive and curative services. Service providers were demoralised by their own increased work burden due to their fellow's absence. There was also dissatisfaction among community members and service providers over the management of worker absenteeism.

At district hospital 1 RCH clinic, providers indicated that there were official reasons for absenteeism, such as sickness, attending funerals, escorting patients to referral hospital, attending a trade union meeting, seminars or accompanying health department visitors in the villages. Some service providers at a district hospital said that escorting patients to a referral hospital was a great privilege. Apart from allowances paid for escorting, they could access other amenities such as banks, markets and shops. These distractions not only affected the lower level service providers but also the leaders, whom one of the junior staff accused of misusing trips and wasting time. The junior staff thought that absenteeism might be less if health workers received their salaries in their own districts instead of into a distant bank to which they did not have easy access.

"If you go to XXX [a nearby district headquarters with a bank] at the end of month, you may be surprised because, if cars are OK, more than three cars from our council will be there, each for a separate head of department. Within short period, you will hear people saying that we do not have fuel while they are misusing it to follow their salaries. Worse enough they rarely carry anyone else, even if we work in the same department." (PHN at RCH clinic, hospital 1)

Illustrative example 5: Provider absenteeism at dispensary 1

In village 1, during early 2005, the local dispensary had three salaried workers, a Clinical Officer (CO), Public Health Nurse (PHN) and a Nurse Assistant (NA). The PHN was responsible for the RCH clinic while the CO and NA worked at the OPD. Six months later, the PHN left for further training, which left the CO at OPD assisted by a VHW, while the NA replaced the PHN at the RCH clinic where three VHWs assisted her. The NA then had to provide services at both the OPD and RCH clinic due to the CO's persistent absenteeism. She found it hard to attend clients at both the RCH clinic and OPD. Moreover, there were several occasions when villagers brought their sick children to the NA's house after office hours and sometimes she had to go to the dispensary to attend women in labour. While visiting the NA at home one evening, a man and woman brought their feverish child. The NA advised on treatment and encouraged them to knock at her door any time, if they noticed any major complication. On different occasions when the WT accompanied me on home visits during evening hours, I heard the WT and other mothers either urging each other to take their sick children to the NA's house because they knew she would help. Many mothers appreciated the NA's services at dispensary 1. However, she complained about a lack of recognition and rewarding system.

One morning around 8:40am when the CO was absent from the dispensary 1, I saw many clients at both OPD and RCH clinic. The NA moved around murmuring before she decided to start the day by attending OPD clients. She asked one of the VHWs to weigh children at the RCH clinic meanwhile, and to ask those for vaccinations to wait. Having attended OPD clients, the NA attended five pregnant women in the ANC clinic. By 13:55, there were about 15 babies, many crying, waiting for vaccinations. The NA came straight to the child vaccination clinic and started working on the pregnant women's register book. When a VHW asked about mothers who had been waiting, the NA, looking

frustrated, instructed that those mothers should leave their children's RCH cards behind and come another day because she was feeling too tired to attend more clients.

> *"I am tired now. Imagine working here every day from morning until late evening and being in a village where people can knock at home any time for service. Unfortunately, the government does not appreciate. I get very little salary compared to big responsibilities that I do here and at the same time, the CO earns big salary for not working. Ask them [mothers] that today I cannot vaccinate, let those who wish come tomorrow." (NA)*

There were varying perceptions over the frequent absence of the CO: the CO himself claimed that he had to travel away frequently to see his family in another district, because his DMO and health committee had failed to provide suitable accommodation for them. However, some villagers claimed that the CO travelled to work at a private drug shop over 150 km away. A local political leader claimed that he had heard the CO complaining about his house, but he thought the DMO should have suspended him because government employees should be prepared to accept the living conditions at their duty stations. Although the WT and an elderly security guard at the dispensary dispensary 1 disliked the CO's absenteeism, they had some sympathy over his house (Figure 5). According to the security guard, the building was over 30 years old and had never been repaired.

> *"Our doctor is a courageous man to live in such a scary house (Figure 5). I would not dare sleeping there like him. Those walls can collapse anytime." (WT)*

Others thought that the CO had someone backing him in the district; otherwise, they would have taken disciplinary action.

In 2007, the CO was replaced with another. The new CO said that the dispensary building looked attractive while the clinician's house was unsuitable for settlement. However, he expressed commitment to stay in the area, with the hope that the NA and village leaders would help in obtaining an alternative house.

At an administrative level, the DMO acknowledged the health workers' accommodation crisis across the district. However, he indicated that it was not easy to solve the housing problem without external support.

> *"We know about house problems dispensary 1 but we have limited budget. We have donors but they have their own preferences, e.g. improving the regional hospital buildings. Dispensaries and health centres are not in their agenda. Therefore, we are still working on that issue. If you know any good source of funding, we will be happy to welcome them. Meanwhile, we have been encouraging our workers to rent private houses." (DMO)*

Figure 5: Clinical officer's house at a dispensary

5.3.4 Mistrust

During interactions with CHMT members and service providers, I observed behaviours coupled with conversations that portrayed mistrust which affected service delivery.

Illustrative example 6: Mistrust among CHMT members in district 2

An RCHC from one district did not attend an important feedback meeting organised by the IPTi project for key CHMT members from the five intervention districts during mid-

2006. One day before the delegates from this district left for the meeting in Mtwara, the DMO and RCHC told me conflicting statements about the trip. In the evening, the RCHC said she was unaware of the meeting. Earlier that day, the DMO had told me that he had already informed all delegates including the RCHC about leaving early next morning for the meeting. The RCHC did not attend the meeting and had not received any feedback when we met two weeks later. She indicated mistrust between her and the DMO as a potential reason for being excluded. She said that the DMO and some other CHMT members hated her because she was against their plans to misuse funds. She said the DMO delayed her official claims for money to improve RCH services. The project implementer said he was also aware of misunderstandings between the RCHC and DMO.

The mistrust among CHMT members was not unique to this district. A DMO from another district commented in an informal meeting that when he joined the post, he found rival groups among the members from two major ethnic groups who dominated the CHMT composition. However, he resolved their differences and warned those involved to change their conduct. Further interviews with a district health officer, a former district cooperative officer and a village chairperson suggested that differences among the ethnic groups **A** and **B** affected cooperation at work places unless the managers took preventive steps. Traditionally, both claimed superiority over the other. One of these ethnic groups boasted of economic power due to ownership of large cashew nut farms, while the members of the other group felt that they were better educated.

Illustrative example 7: Mistrust among service providers at health facilities

The interviews with service providers and other informants revealed a lack of trust among service providers, including about the handling of official absenteeism at health facilities. Some health workers lamented that they remained at duty stations more frequently while their fellows got more opportunities to work out of station.

"There are special people at our work place; all of them are from the same tribe [YY] as our RCHC. The RCHC favours people from the same ethnic group whenever there are opportunities for extra money, like attending workshops and assisting researchers or other guests who want to visit in the villages. As we are talking now, two people from the same ethnic group are moving around with guests in the villages. When they come back, the same people will go out again, and leave us here as if the clinic has labels which show that we [workers from a different ethnic group] should always be there." (PHN at TH RCH clinic)

Mistrust between community leaders and service providers

My observations and interviews with health workers and others show mistrust between councillors, health workers and community members.

Illustrative example 8: Mistrust between community leaders and service providers at dispensary 1

When I arrived at village **1** for a second round of IES, the NA complained that the councillor had tarnished her name in a public meeting, where a member of parliament was guest of honour. The NA claimed to have heard through friends who attended the meeting that the councillor falsely accused her of injecting mothers with water instead of Depo-provera for family planning. The NA felt that the councillor was unfair to say such things in such a big meeting before discussing it with her. The VHWs and WT confirmed her report. They said he was representing men who had complained to him that their wives had conceived, despite having paid Tshs 500/= [unofficial charges] for Depo-provera. The men reportedly suspected that the NA was injecting them with water.

These public accusations negatively influenced the NA's behaviour, according to mothers and my personal observation. The WT and VHWs reported that the NA repeatedly talked negatively about the councillor, while attending mothers, after she heard what had transpired in the meeting. The NA told me she vowed to avoid future meetings where she said that the leaders felt proud to embarrass others through false allegations.

"The NA openly told mothers that the councillor is a rumourmonger and she keeps asking, how such old man could say that she [NA] injects water instead of depo provera. The NA also claims that the councillor talks about drugs while he is not educated. Those who heard were not happy, so they went to tell the councillor. Women like him because he [councillor] told the truth, she sells depo provera herself but she accuses us [VHWs] of stealing in front of clients at clinic." (VHW)

When interviewed, the councillor praised the NA for doing a great job alone, during and after working hours, both at the dispensary and her house. The councillor admitted that he had talked in a public meeting about corruption. However, he insisted that he did not hate the NA, but the corruptions, which the community had informed him of. The councillor was aware of the NA's negative talk about him. However, he claimed to have been avoiding an exchange of accusations with her.

"If I wanted, I could take strong measures against her. I think she has forgotten that I am her employer as I am also for her boss, the DMO. We are community representatives, so I can't just close ears when people express their grievances." (Councillor in IES area)

Local village politics also featured in the ways that both health workers and community leaders interacted with VHWs who worked at the dispensary. Two VHWs reported that their village leaders secretly used to ask them about progress at the dispensary, especially about salaried health workers' involvement in charging unofficial fees, or stealing drugs at the dispensary. The two VHWs also reported that the NA used to favour another VHW, whom they accused of conspiring with the NA in facilitating corruption. The two VHWs also did not trust their dispensary committee chairperson because they suspected that sometimes he betrayed them to the NA, by revealing what he heard from other village leaders who quoted the VHWs.

5.3.5 User charges

User fees in the form of unofficial charges and "official local user fees" constrained both delivery and uptake of preventive services in the study areas. My observations at clinics and interviews with service providers and users at facility and community revealed that

unofficial charges for preventive health services were widespread. For example, the HO at a district hospital clinic reported that some VHWs had been unofficially selling RCH cards to mothers. The HO thought that the VHWs had been selling the cards because they lacked any formal income apart from occasional allowances during campaigns.

My desire to investigate the unofficial charges for preventive services arose after I directly observed a mother and a VHW exchanging an RCH card for cash at dispensary 1. Service providers and mothers talked of unofficial charges as penalties for mothers who presented newborns to clinic for the first time if they had delivered at home. Mothers were also likely to pay unofficial fees if they either lost an RCH card or presented children to clinic with shabby ones.

Illustrative example 9: Unofficial charges for an RCH card at dispensary 1

During observation at dispensary 1 in May 2007, I met Mama Hatia, a married woman with a 21-month-old child called Hatia, who had just moved to the village from neighbouring Ruangwa district. Initially I applauded her for keeping her RCH card looking so brand new. However, she revealed that it was truly a new card which a VHW had just given her for Tshs 500/= (~$ 0.5). She courageously identified the VHW.

Mothers, the WT, the Ward Councillor, the NA and a VHW all reported that in certain circumstances mothers had to pay Tshs 500/= at clinic. Mama Hatia claimed that the same charges were common beyond Lindi district, especially for mothers who delivered at home. She felt that it was unfair to pay because the same cards were free of charge in some places. However, she did not intend to do anything about it because she thought it was not good for someone who was still new in the area.

> *"That woman [pointing at one of the VHWs] retained my child's card] when we came for services in the past two months, because it looked shabby. She asked me to bring Tshs 500/= for a replacement card during the following attendance on [last month]. Unfortunately, last month I travelled to a village to help my brother*

who was seriously ill and admitted at hospital. So, I was not able to attend and just travelled without that card and today, I have received a new one because I was able to bring Tshs. 500/=." (Mother, individual interview at dispensary 1)

When interviewed, the female VHW, aged 25 with secondary school education, admitted to having charged Tshs 500 for the new card, in the presence of another VHW called R. This VHW claimed that the former VHW had taught her to charge Tshs 500/=. She added that even the NA often charged clients for RCH cards and other services such as Depo-provera injections and drugs.

"When I joined here, the former experienced VHW who had worked here for many years informed me that [salaried staff] had instructed her to charge Tshs 500/= when replacing cards. That issue is not a secret here, even mothers know that if they destroy a card, they have to pay Tshs 500/=. I also once received Tshs 500/= which was wrapped in an RCH card from a mother who asked me to give to sister H (A long term VHW at the dispensary, who had just left for private drug shop). Sister H was busy that day and when I asked her what to do with that money she told me just take it and write a new card for her (mother's) child".

The VHWs kept the money they received without revealing it to the NA. According to the WT, there were complaints in the community that the NA also kept "unofficial money" which she received from clients. However, the same NA claimed to VHWs that she used her money to hire someone for cleaning the dispensary surroundings. The charges on RCH cards were justified by providers as punitive measures for mother's apathy *[uzembe].*

"It is mother's responsibility to protect her child's RCH card. This mother has paid for her own apathy. In addition, if they deliver at home, they pay because it is their own apathy [uzembe wao wenyewe] for not coming to give birth here at the dispensary. We were taught to tell them that they are charged for "uzembe" when they lose a card or come with a shabby one and when they don't come to deliver at dispensary." (VHW)

Furthermore, the VHW number two issued an old version of an RCH card to a woman who paid Tshs 500/=, instead of a new version. The new version had been adapted to include records for IPTi together with routine EPI vaccinations and growth monitoring

information. The new version was also marked on top with a red warning in Swahili *"HAIUZWI", i.e. NOT FOR SALE.*

> *I: Why have you given an old version of RCH card instead of those, which are marked "NOT FOR SALE"?*
> *VHW: I thought both of them are equal, but [laughter], do you think there is anyone who is courageous to sell those red letters? No, it is not easy to know how a mother could feel about it.*
> *I: How would you feel if you were in the position of mothers whom you charge that amount?*
> *VHW: I would feel that I have exploited her [Natajisikia nimemdhulumu], but mothers know that they have to pay if they do not take care of their cards.*

Illustrative example 10: Children who missed vaccinations due to perceived unofficial fees

A few mothers at village **1** said they had not taken their children to clinics because they did not have money to pay for RCH cards. Substantiating such views are extracts from discourses with two mothers of different ages, each an uneducated single parent, and residents of CH ward. The first respondent, 22 years old with two young children, had not taken her one-year-old boy to clinic after DPT HB 2, seven months previously. This child should have received DPT HB 3 followed by measles vaccination and IPTi in July 2007, 3 months before my interview. However, she had no plans to take her child back to clinic.

> *I: Why has your child not been to clinic since last year?*
> *R: I am afraid of being chased away if I go without Tshs 500/=.*
> *I: Why should you take money to clinic?*
> *R: My child's card is damaged and I cannot get another one without paying that Tshs 500/=*
> *I: How did you know that you cannot get a replacement card without paying Tshs 500/=?*
> *R: Everyone knows here, without that money, you cannot get a card. If you go for delivery you should take that Tshs 500/= if you want to be given a card. If you deliver at home, they still charge the same amount when you present a child to clinic for first time.*
> *I: Who charges that money?*
> *R: All of them, especially a VHW from one of villages and our Mama Mkunga [Midwife] referring to NA at dispensary 1. We also call her dokta, i.e. clinician, and nesi, i.e. nurse.*
> *I: Are there other services, which mothers pay for at clinic?*
> *R: Tshs 500/= for family planning injection [depovera] but pills are free of charge.*

During observation at dispensary 1 clinic one Monday, I interviewed a few among 12 women who had been waiting for RCH services from morning until 2.30 pm. These mothers looked desperate and hungry, some babies were crying and others were breastfeeding. A 45-year-old mother said she had just brought her 3-month-old child to RCH clinic for the first time. She attributed her delay in attending the clinic to *"lack of money for changing a card" [kukosa hela ya kubadilisha kadi].* Changing a card was a common expression in all study areas, which meant that after giving birth, a mother should obtain an RCH card in exchange for her ANC cards.

> *R: I am just at clinic for my child - starting clinic today [when the baby was 3 months old].*
> *I: Why?*
> *R: You know about money problems. After giving birth we [mothers] are not supposed to attend clinic with mother's [ANC] card any more. We must bring Tshs 500/= for a new child's [RCH] card. They will not give you an RCH without paying Tshs 500/=, especially if you delivered at home like me.*
> *I: Have you received an RCH card for your child today?*
> *R: Yes, but it is still on that table because my baby has not been vaccinated yet.*
> *I: Are you going to pay that Tshs 500/=?*
> *R: Yes, to the "madokta" [NA and VHW are termed as dokta, i.e. a doctor]; I will give that money when they ask me to give it after all services.*

During my last in-depth stay in village 1, there was talk about some VHWs who had been suspended from working at the dispensary because of scandals about them forcedly retaining RCH cards in order to exchange them for cash. The VHW who charged the mother for a card also revealed other opportunities for unofficial payments at the dispensary.

> *"There are channels [mianya] there. For example, instead of paying Tshs 1000/= for cost sharing, someone may come straight to drug dispensing window with Tshs 500/= and request for help. That is how "wise people" [wajanja] get drugs. I have never seen counting drugs or other items here!" (VHW)*

Dealing with unofficial fees within local leadership and CHMTs

Surprisingly, unofficial fees on RCH cards persisted despite the knowledge of community leaders and CHMT members. The WT at village 1 could not explain why mothers never raised the issue in interviews and FGDs. She said the local leaders never took action

although they knew what was going on, but the women lacked confidence and knowledge of how to deal with service providers who mistreated them. The ward councillor claimed that he already had warned mothers to stop paying the unofficial fees and therefore it was up to them to help themselves.

In an interview at his office, the DMO in Lindi acknowledged having received similar complaints from MM village. He said that he advised the villagers who complained to bring evidence that could help in disciplining those involved. The DMO claimed that efforts to curtail corruption at health facilities were constrained by conspiracy between community members and health workers. Hence, although he had received anecdotal reports of service providers charging mothers unofficially, the DMO handled the matter weakly as he claimed that there was a lack of evidence from villagers. The DMO proposed that I should ask the IPTi team to conduct a quantitative investigation across the district in order to know the magnitude of the problem.

"Official local user fees" for child health interventions

Some community leaders, in collaboration with dispensary workers, had introduced official "local user charges" for immunisation and growth monitoring services that were supposedly free of charge.

In the second phase of IES, I learned through the WT and other respondents at village 1 that the village government and dispensary committee leaders had introduced official "local user fees" on weighing and vaccination services. Parents had to pay Tshs 50/= per child weighed and an additional Tshs 50/= if the child required immunisations. The dispensary committee chairperson justified these "local user fees" as an initiative to raise money for paying allowances to the dispensary security guard, VHWs and cleaners.

> *"It was clear that we had no other source of raising funds apart from introducing that little fee on immunisation and growth monitoring services. Moreover, in*

order to boost our village earning our committee received some money from three villages to buy syringes which our nurse will be charging Tshs 100/= each." (Dispensary committee chairperson, dispensary 1)

CHMT members and community members had opposing views on the reasons for such fees. The dispensary committee chairperson and two VHWs said the dispensary had previously met these costs from the official user fees paid by OPD clients who were not members of the Community Health Fund (CHF), who had been paying Tshs 1000/= (~$ 1) per visit. This money previously remained at the health facilities, but a new requirement demanded that all collections were sent to the district office. The chairperson said none of this money had been returned from the district as promised. However, the DMO said:

"Dispensary committees are encouraged to look for means to raise funds but not by charging for the already exempted services. Nobody has mandate to charge money for services which national policy declared to be free. If anyone does that, it is not correct." (DMO)

On the disbursement of CHF money, the DMO said that the aim was to reduce misuse of funds at health facilities.

"We realised that the dispensary health committee were using the CHF collections for matters such as paying security guards and VHWs, contrary to instructions that they should look for alternative sources, such as encouraging voluntarism spirit among villagers who help in provision of health services. Our plan is to accumulate the CHF collections and others from national health insurance and send the lump sums back to respective dispensaries so that they can use the money for issues such as minor repairs and other minor costs." (DMO).

Consequences of "local user fees" on preventive child health interventions

A village-based informant reported how mothers interpreted the "local user fees" at their dispensary as detrimental:

"There is another fire, which is going to erupt in our ward; mothers are saying they will go to other clinics or simply stay at home with their babies. We are tired of these leaders. Nowadays, if you go with a child without Tshs 100/= you will come back as you went because they will not give vaccination. Tshs 50/= for growth monitoring and additional Tshs 50/= for vaccinations. That is apart from Tshs 100/= which our leaders also introduced on syringes." (WT)

5.3.6 Not checking for due vaccinations

Through interviews with mothers during LAS and my observations of RCH cards, I found that some health workers weighed children but sometimes did not check whether they were due for vaccinations. At RCH clinics, I saw almost all mothers putting their child's RCH card in a box in the waiting area where children were weighed. Service providers called the names of children using the cards in the box, starting with those who came first. After weighing, the service providers normally held the cards and asked the mothers to wait if a child was due for vaccinations. However, during exit interviews, I observed vaccination gaps on the RCH cards of a few children who were about to leave. Some mothers said that they assumed the service providers handed back the card because they knew that their children did not need vaccinations. Surprisingly, some mothers were aware but simply left the clinic and later blamed the service providers.

> *"I brought my child at this clinic last month twice but they (service providers) did not say that the child was supposed to get vaccination. Therefore, he missed third injection on thigh last month and today he could have missed again, had it not been because of this conversation. When we take our children there, we respect whatever they tell us. Telling a nurse that she has not checked vaccination may sound like teaching her what she already knows. I have not heard any of us [women] who attempted to correct the nurses (DPT HB 3?) last month." (Mother in-group Interview at TH hospital)*

Another 22-year-old mother with primary school education from TH had her 4-month-old child vaccinated against DPT HB 2 after the WT checked when she was about to leave clinic after weighing. During a follow-up interview at her at home, the mother explained:

> *"My child was about to leave the dispensary without getting injection on thigh [DPT HB] and IPTi. They weighed my baby and gave the card back to me without asking me to wait for IPTi. I decided to leave because they did not hold my child's RCH card for vaccination. Fortunately, I met my friend [WT] at clinic and she asked me to queue my child health card for IPTi. Otherwise, I would have left without my child getting vaccinations and IPTi today, because after growth monitoring the Nurse just handed back the card to me without any instructions and the nurse who vaccinated my child gave me a half of SP Tablet and asked me to ensure that I administered at home." (Mother, TH, interviewed at home)*

Similarly, I observed a mother of a 17-month-old boy whose RCH card showed a gap for measles vaccination, which was due at the 9th month. She said that she had been attending clinic regularly. However, the service providers never told her about measles vaccination. The HO at the clinic vaccinated the boy after my conversation with the mother.

5.3.7 Problems with record keeping

Documentation of health information was challenging for service providers, at both dispensary and district hospital levels. During observations and discourses with service providers at health facilities, it emerged that some of them focused on attending clients, and avoided documentation, a task they perceived as more laborious. I observed mistaken return dates on several RCH cards, requiring children to attend clinic on Saturdays or Sundays. The HO and PHN at the district hospital clinic in the IES area admitted that it was possible to make mistakes, particularly when clinics were very busy. Crowded clinics were stressful to providers when they were few, and some of them just counted four weeks after the existing date of attendance without crosschecking the calendar.

The HO at a district hospital and NA at dispensary, both of them in the IES area complained about too many books and forms for record keeping, citing several books of the national health management information system (MTUHA[6]), tally sheets and a separate book for ITN discount vouchers. They also had to complete record books for ANC services, including family planning and PMTCT, STI and monthly reports, in addition to keeping OPD and birth records. Information on immunisation, discount vouchers and IPTi were also marked on RCH cards. I observed a sole NA at dispensary 1 repeatedly struggling to reconcile the records of used drugs, syringes and IPTi tablets that often failed to match with remaining stocks. Both salaried staff and VHWs said that

[6] MTUHA is an abbreviation for Swahili phrase *(Mfumo Utunzaji wa Taarifa za Huduma Afya)* which literally refers to Health Management Information System (HMIS).

sometimes, they vaccinated children without keeping a record on the RCH card, tally sheet or MTUHA book.

At TH clinic, I observed the HO working on documentation several times while PHNs from the same department chatted on the benches or walked out for a long lunch-break. The HO said that the PHNs assumed that record keeping for all child health services was the HO's responsibilities. For two weeks when the HO was away, two PHNs administered vaccinations and IPTi but retained the cards until the HO returned and updated the records.

Haphazard change of child names and implications for providers

Some parents had a tendency to rename their babies and write the new names on RCH cards at home. The HO at TH complained that this made it difficult for health workers to crosscheck names on different MTUHA books. I observed a mother who brought a child to TH clinic with an RCH card with a difference first name from that in the hospital record. While the HO held that it was common for the people of a certain ethnic group to change their names haphazardly, a few mothers interviewed said that they changed the names when fathers denied their children.

> *"After the father of this child denied his fatherhood, I decided to give the child my father's name." (Mother interviewed at TH clinic)*

Similarly, a mother at dispensary 1 reported that she had to change her child's first name, which resembled the name of an uncle of the child. The baby's uncle did not want to give his name to the child, claiming that there were so many children bearing that name. Instead, the uncle proposed another name, which the mother then put on the RCH card without informing health facility staff.

Lack of reliable population data and reliance on RCH card

In preparations for the campaigns for integrated distribution of mosquito nets and measles vaccination, village leaders visited households to register eligible children (under-fives) due to lack of reliable population data. The only reliable source was an RCH card. The general high reliance on RCH cards led to demands for unofficial charges by service providers and parents attempting to write false information. For example, some mothers decided to mark the cards to show that their children had been to clinics regularly. Others changed the dates of birth on RCH cards as a way to force eligibility for ITNs.

5.3.8 Direct observed therapy

Interviews with all WTs and FGDs in the LAS areas indicated that some providers vaccinated children but gave the corresponding doses of IPTi to mothers for home administration. Both the CO and PHN at a district hospital clinic told me at the beginning of participant observation that they had never given out IPTi tablets for home administration. Nevertheless, the HO and PHN reported a lack of clean water as a major constraint for delivering IPTi. The HO and PHN blamed the District Nursing Officer (DNO) for failing to supply water purifiers. Another PHN, who had joined the clinic from a health centre, reported to have seen the PHN and HO not giving IPTi as DOT (direct observed therapy), contrary to what she had learned with them in the initial IPTi training. In the second round of IES at the same district hospital clinic, the same HO reported that after my departure in the first round, he recovered a stock of water purifiers, which had been unnoticed in the hospital store for many years. The HO said that the problem of home administration no longer existed at the clinic. As already pointed out in this chapter, some service providers also admitted that they avoided delivering services including DOT because of staff shortages.

5.3.9 Mixed policies on ITN distribution vs. local retailer's interests

As shown earlier in this chapter, the local retailers initially supported a campaign that involved free net distribution to all under-fives. However, after the campaign, the business declined, hence some retailers felt that the government had betrayed them.

> *"I have heard that there are plans to bring free nets for pregnant women. Did the government mislead us to become the voucher agents so that they could celebrate our bankruptcy? To whom should we sell the remaining stock? Had we known that the government would be so undependable, some of us would have invested our capital in other reliable business, such as selling foodstuffs." (Discount Voucher village **8**)*

> *"Imagine discount voucher agency accounts for more than 65% of my business now, with most of my capital in it. I wonder if the government will give me a loan to do another business while my capital is not in circulation." (Discount voucher agent village **6**)*

5.4 Discussion

The definition of and guidelines for IPTi clearly recommend offering this non-cold-chain dependent intervention alongside the EPI schedule for DPT-HB2, DPT-HB3 and measles vaccination [24, 27]. Successful EPI services rely on the cold chain, which requires an effective system, with motivated service providers and reliable logistic and technical capacities. However, the technical, logistic and human resource problems had a major effect on service delivery at rural health facilities and outreach clinics. Constraints on delivery of vaccinations also affected the delivery of IPTi and discount vouchers targeted at children. Furthermore, qualified providers are unlikely to remain long at remote facilities, partly due to a lack of suitable accommodation and opportunities for continuing education. These barriers to service delivery need further attention.

The findings from this study are consistent with those from a household survey conducted across the five study districts in the same period [65], in that there was inequality in terms of delivery and access to essential child health services in southern Tanzania. Health facilities located along tarmac roads, at hospitals or health centres and at the district

headquarters, had better access to supplies than those in remote areas. Relatively, these facilities were less affected by technical and logistical problems; they had electricity, shorter periods of stock outs for gas and other supplies including vaccines, drugs, vouchers, and mosquito nets were available in the local shops. Moreover, service providers felt that working in these areas was a motivation. Motivated employees are more likely to provide better services [67].

The findings have shown how specific projects or programmes (e.g. IPTi and the discount voucher scheme for ITNs) and campaigns were well organised, coordinated and managed compared to routine services. Recognition of their competence, reliable transport, financial incentives and availability of supplies empowered the programme and project staff to conduct their activities confidently. Thus, there were obvious improvements in delivery of these interventions.

Surprisingly, despite the integration of IPTi supervision into CHMT plans, service providers mostly acknowledged the support and thorough follow-up of the project implementer. The CHMT members committed themselves to improve service delivery after they received feedback about service implementation from research conducted both at health facilities and in the community. The feedback from the research instigated a 'role model' spirit among the DMOs.

Reasons for vaccination and service delays

The delay in vaccinations shown in this study reflected the broader health system and service provider situations. There were periodic shortages of vaccines, as reported in local newspapers [196]. In Tanzania, the district level is central in the distribution and management of EPI services [94]. However, the findings have shown how transport problems prevented the delivery of child health supplies to dispensaries despite their

availability in the district hospital. Staff went by car or motorcycle for other reasons to the health facilities where there were vaccines but did not bring back supplies because of uncoordinated transport use. The question arises of whether these alternative means of transport could have carried the cold boxes when the cold-chain car had problems. In another district, a nurse walked to an outreach clinic, carrying vaccines in a cold box, and similarly, providers at a dispensary near the main road used bicycles or public transport to carry cold boxes from nearby hospitals.

The findings have also shown how service providers delayed the administration of available vaccinations to avoid wastage of vaccine, and hence loss for the government, from vaccinating only a few children. It is possible that written instructions addressing the issue of vaccination delay and wastage could have changed the situation.

The critical shortage of service providers, lowly motivated staff as well as official and unofficial absenteeism led to delays in service provision at health facilities. A large quantitative health facility survey in the same areas found that only three-quarters (75%) of dispensaries had at least one prescriber and a similar proportion (76%) had at least one nurse [65]. The present study adds a deeper insight. Service providers expected official absenteeism as a special privilege to get extra allowances, shopping opportunities, attend workshops, etc. Those who seldom benefited from official absenteeism felt overburdened, undervalued, underpaid, and isolated. Thus, such providers were unmotivated to learn new skills from those who did attend workshops etc., as well as to provide services. The association between perceived motivation and performance is widely published. From an etic perspective, a service provider's reluctance to learn from other workers who attends training or workshops could be caused by envy of those who get such opportunities [69]. However, from an emic perspective, those who miss training feel that they remain at work with a larger, unrewarded workload, while their fellows gain skills and financial incentives. Therefore, plans should be in place to motivate both those service workers

who attend seminars and workshops and those who do not. The example cited from the discount voucher scheme shows that a VHW appreciated receiving cloth from course organisers through the NA who attended the course.

Provider-client relations

Client-focused interactions, mutual trust, respect, the ability to recognise and value the disadvantaged with cultural humility are essential for a positive, reciprocal provider-client relationship [197]. We showed how an elderly PHN built a relationship with the mothers, acknowledging that she had relinquished her power, and building on cultural norms of grandmothers joking with young daughters. Moreover, service providers who involved the local communities in planning a schedule for service provision, and others who talked to clients in a friendly manner, enjoyed a positive relationship with the community. Mothers reached the extent of voluntarily rewarding such workers with harvests from their farms.

Direct observed therapy

Direct observed therapy (DOT) increases compliance to interventions. Service providers were aware of non-compliance with IPTp if given for use at home. Despite this, several providers gave IPT for home use instead of DOT, citing a lack of clean water and water purifiers as the main reasons. Improved service provision and uptake require the availability of water both in the community and health facilities. Clean water is vital for preventing communicable diseases. The research evidence obtained during this study and the Ministry of Water's latest budget speech concur that there remains an appalling water situation at most health facilities and in the communities of urban and rural southern Tanzania [65, 198]

Management and supervision

Some of the logistic failures noted in this study, such as delays in paying electricity bills and evacuation of bees, were to be expected given the bureaucratic management of health facilities. Instead of waiting for district level officials, the local health facility boards could have managed such issues themselves. Local people know their priorities and if empowered with resources and skills, they can contribute to improved service delivery and uptake [199, 200]. The results show that when faced with a lack of resources to meet locally perceived priorities, such as rewarding the security guard and VHWs, a health facility board resorted to introducing user fees on immunisation services. In what suggested a gap in information sharing between the CHMT and local health facility boards, the board members said the user fees were part of mandated community initiatives in fund raising. In contrast, the DMO insisted that fees on exempted services were illegal, although he did not show any sign of taking action.

Service providers could improve their practices if they were more highly motivated and supervised as well as receiving feedback. Providers reported how they recovered the unused stocks of water purifier and they changed their health education style, record keeping and administration of IPTi as a direct influence of researchers and the IPTi project implementer. However, some service providers improved their behaviours expecting promotions, e.g. to be earmarked as trainers when interventions would be rolled over to non-intervention areas. Close support, supervision and follow up at health facilities and in the community generally helped to improve delivery of services.

Moreover, a good provider attitude towards services delivered and the working environment enhanced provider performance and behaviour at large. As shown in the results, vitamin A administration was provider friendly because it was conveniently packed. Therefore, as argued elsewhere, adherence to delivery and uptake of interventions

such as IPT (p/i) could benefit from development of packages that are both provider and client friendly [28].

Another important aspect coming from this study is a need to understand the health worker's life both within and beyond working hours at health facilities. Time and motion studies [188] may underestimate health workers' work burden because they do not include work done by the providers after working hours. For example, a service provider's home turns into a small hospital when the villagers need help after hours. These providers also need to attend village meetings etc.

Documentation of service interventions

Record keeping appeared to be a particularly challenging task at most health facilities, due to a shortage of staff and absenteeism. The same providers had to register clients and attend them at OPD, RCH, assisting deliveries at the facility and during home-based care. At RCH clinics, providers had to keep the records of clients and services provided for immunisation, weighing, discount vouchers, IPTi for children, as well as family planning, pregnancy monitoring, PMCT, and IPTp.

Mistrust and local politics

Mistrust among CHMT members, service providers, local leaders and communities constrained service provision. Mistrust arose out of power relations between salaried staff, VHWs, and community leaders and along ethnic lines. Moreover, mistrust was often due to competing and conflicting interests, e.g. regarding unofficial charges.

The role of community members in facilitating service delivery was clear, particularly in campaign-based interventions and was assisted through incentives such as allowances and seminars. Profits on subsidised mosquito nets motivated local agents to promote this intervention beyond their shops. On the contrary, while the community had high

expectations of VHWs, they lacked formal allowances, training and support. This could explain why it was easy for VHWs to get involved in alleged stealing, unofficial charges and local politics.

5.5 Conclusion

Health system factors, including health infrastructure and service providers, played a major role in both the successes and shortcomings noted in service delivery. Logistic and technical failures, a shortage of service providers, a lack of motivation partly due to poor housing and low salaries, official and unofficial user charges, and mistrust among service providers and CHMT members hindered efficient delivery of services. Unfortunately, there were no prospects for solving such issues in a situation where the DMO lacked resources and influence in recruiting new staff, expecting researchers to invite the donors to build accommodation for service providers or generate quantitative evidence about the magnitude of both official and unofficial user charges on child health services. This shows an apparent gap in the CHMT's ability to address local issues due to limited access to information from the community and over-dependence on external sources.

The double standards on community involvement in facilitating routine child services were due to a lack of motivation and presence of less concerned leaders on child health services. The direct benefits to those who participated in campaigns or selling subsidised nets facilitated services, while district health board members and women leaders felt unconcerned because they were not of reproductive age and did not see the need to participate unless someone invited them into seminars. Moreover, some leaders conspired with service providers to introduce user fees and they protected providers who mistreated mothers at clinics. With commitment and availability of required resources, most barriers to preventive service delivery can be addressed within CHMTs and health facilities as

well as through improved community leadership and the involvement of women of reproductive age.

Chapter 6

Factors facilitating and constraining the uptake of child health interventions

Introduction

This chapter presents the study findings on what considered as facilitating factors and barriers to utilisation of child health intereventions in the study areas. The chapter begins with findings divided under two major headings, each with subheadings (6:1 (facilitating factors and 6:2 barriers to service utiliosation). The next sections contain discussions of this chapter, followed by concluding remarks.

6.1 Factors facilitating uptake

6.1.1 Access to services

Relatively easy access to health facilities, free services and subsidies encouraged parents to seek preventive services for their children.

The accounts of various respondents and my personal observations suggested that several children had received RCH services at clinics that were not their nearest, while travelling, due to their mother's decision to seek services elsewhere, or after being referred by local service providers. For example, on different days during IES, I observed mothers from various villages at a hospital district clinic and met many others on their way, who reported that they were from villages with local dispensaries where the services were unavailable. Others simply decided to go straight to the district clinic because they expected better services. Interestingly, service providers attended children as long as their mothers presented RCH cards. Thus, access was facilitated by possession of an RCH card, having a bicycle or by being well enough to walk to alternative facilities.

Moreover, mothers, fathers, community leaders and service providers indicated in both formal and informal conversations that free delivery of RCH and campaign-based preventive interventions facilitated access regardless of socio-economic background. A local agent for ITN discount vouchers at village **6** and the HO at district hospital **1** also thought that the introduction of discount vouchers had encouraged both fathers and mothers to buy more mosquito nets than ever before.

> *"Sometimes I sell the discounted nets on credit and to customers whom I trust because I know how they should pay back." (Mosquito nets discount agent at village 6)*

6.1.2 Provider's attitude

There were a few service providers, who helped mothers to utilise the services. For example, some mothers at village **6** and village **9** in district **1** and others from the district hospital clinic explicitly named the PHNs and a HO whom they felt comfortable to ask if they had any question. These providers were described as charming, polite, respectful, willing to listen and answer questions, and respectful to mothers. For example, during LAS the female FGD participants at village **6** reported that good feedback in the community about the services of a new PHN at village **6** health centre had attracted mothers who previously avoided clinic due to misunderstandings with the staff. As already pointed out in chapter 5, some service providers acknowledged how they managed to influence their clients positively, contributing to uptake of preventive health interventions.

6.1.3 Information flow and community mobilisation

Both service providers and community members contributed to spreading the news about preventive interventions. As shown in chapter 8, health workers sensitised mothers about preventive interventions, including subsidised mosquito nets, immunisations and

campaigns. However, information was provided more intensively during campaigns and on the discount voucher scheme than on routine preventive services. Information flow for campaign-based interventions involved the mass media, service providers and local village criers. Moreover, information about campaign-based interventions reached the local communities during pre-campaign child registration, done by the village leaders. During campaigns, we observed the CHMT members as they were addressing the crowds in the villages on the importance of each intervention included in the campaign, including measles vaccinations, mosquito nets and anti-worm tablets. Service providers and community members across the study districts, acknowledged the information flow channels and activities for creating awareness, which contributed to high uptake of campaign-based child health interventions compared to routine preventive services or other campaigns. A few local agents even undertook their own initiatives to promote the discount beyond their shops.

There were rumours in various study areas during RQS (see annex 1) and LAS/IES that many people had been drowsy and a few had even died after they used the drugs distributed during trachoma and filariasis elimination campaigns. There were no such negative rumours during and after the child health campaigns. Rumours reported in a few areas discouraged parents to misuse the campaigns that included free mosquito nets for young children. For example, in interviews and FGDs the WT and mothers at villages **1** and **9** in district **1** mentioned hearsay from service providers and community members about children with adverse reactions after they received double doses of measles vaccinations during integrated campaigns for measles and mosquito nets.

> *"Some people in our village had vowed to take their children to different posts so that they could get more mosquito nets, but they changed after hearing that such actions might lead to their children's suffering like what happened for others in Nyangao and Lindi [Different areas]" (WT at village 1).*

6.1.4 Social and cultural norms for child protection

The accounts of many respondents at health facility and community levels, and my observation, suggested that protecting women and young children was inherent within the cultural values and norms among all ethnic groups in the study areas. The Swahili concepts of *kinga* and *chanjo* were popular, each representing a different form of administering both traditional and modern preventive services. Some mothers and a TBA as well as an elderly PHN demonstrated that the term *chanjo* referred to preventive substances administered through piercing the skin, while *kinga* meant protective substances administered orally or in other ways depending on the perceived risks from both traditional and modern perspectives.

There were widespread traditional beliefs that pregnancy, child bearing and childhood were the most risky life stages in life. There was a general belief that the dangers for pregnant women and unborn babies could still attack both the mother and child after birth. According to female respondents including an elderly PHN and TBAs), there was a cultural obligation to protect pregnant women and young children using traditional measures. Most children and some women in the study areas wore strings of cloth tied on their arms or necks or on their waists, either visible or invisible to others. These are known as *hirizi* or *kinga (protections)*. I observed similar *hirizi* or *kinga (protections)* hung on the walls, doors or windows in the houses and shops where I visited during IES. An in-law of the owner of a house in which I stayed during IES at village 1 reassured me the house was fully protected against witches and other harmful people, showing me a piece of paper inscribed in what he described as Arabic language. In individual and group interviews, the local people talked about soluble protections, which spiritual healers administered to pregnant women and children who were possessed by demons. These demons were locally termed as *mizuka, mashetani* or *majini*.

During LAS and IES, the WT at village **11** and village **1** expressed their own experiences and those of other women with repeated miscarriages, which traditional diviners had explained as demonic attacks. One WT mentioned a popular treatment known as k*ombe* or *zinguo*, which some spiritual healers prescribed and administered to mothers during pregnancy and which continued to childhood.

> *"A pregnant woman is constantly hunted by dangerous wild animals, bad sprits and witches. If they cannot harm her or her unborn baby, they will wait at the time of birth or when the child is still young. Some demons mysteriously attack and dominate women sexually while they are sleeping at night. Such demons hate the foetus and newborns as they see them as dirty in their hosts. That is why we the TBAs protect a pregnant woman and her child. The government also offers immunisation and other services to pregnant women and children at health facilities because they are endangered." (TBA in village 1)*

There was a widespread notion that traditional and modern preventive services were complementary to each other. Respondents maintained that mothers and children should receive both interventions because they protected against different risks. A TBA at village 1 further explained that the local communities respected RCH services because those working at health facilities respected traditional preventive practices, by not questioning when they saw mothers and children with *hirizi*. Otherwise, the TBA claimed that grandparents could have convinced their daughters to avoid the RCH clinics.

Social obligations

Social obligation and value attached to the RCH card influenced mothers to take their children to clinics. Generally, mothers attended clinics monthly in accordance with how the RCH worker instructed them, either verbally or by marking the return date on the RCH card. Taking children to RCH clinics featured as a norm, which mothers valued for reasons including social pressure and attempts to prevent the burden of caring for sick children. Socially, protecting a child suggested a responsible mother. However, mothers of frequently ill children tended to have a bad reputation and were often categorised as

negligent, or as witches, or possessed by demons. During RQS, an elderly TBA and a male traditional healer commented during pre-testing of BCC materials for IPTi that women could harm their breastfeeding children unless they had protections. Respondents also talked about mothers seeking preventive services because of the value attached to weight and the stigma associated with stunting. Increased baby's weight or being relatively large was a healthy sign while stunting suggested a negligent mother. Data from all three-study data collection strategies suggested that most mothers expected growth-monitoring first when they took their babies to clinics, and attached high value to that. In FGDs and individual interviews, several women expressed views similar to a mother at her home in village 1 who felt an obligation to take her child to clinic to maintain her social reputation:

> *"Now I fear that, because of missing vaccinations for a second month, people will blame me as negligent in case my child gets ill while it is not my fault." (Mother at Village 1)*

Mothers also felt obliged to take their children to clinics in order to obtain and maintain an RCH card, which was a prerequisite for other services. As shown in the annex 1, mothers whose children's RCH cards lacked consistent records of immunisation and growth monitoring faced difficulties during treatment seeking at health facilities. In the IES phase, the interviews and discussions with mothers and service providers, and my personal observations, confirmed that some mothers decided to fill their children's RCH cards at home to show that they had been to clinic, as was reported during the RQS (see Annex 1). Furthermore, data from IES revealed that mothers would pay unofficial charges for RCH cards without complaint, because of the importance attached to the card. Mothers reported that the RCH card was required at the time of child enrolment at schools and for ascertaining a child's age, during the distribution of free mosquito nets, during research visits and the census.

Perceived benefits of seeking preventive services

Generally, many respondents talked positively about immunisation services, throughout RQS, LAS and IES. Many mothers believed that the vaccinations could protect children against many unspecified diseases while others specified diseases such as malaria, measles, polio and whooping cough (see more explanation in Annex 1. Both mothers and fathers appreciated additional services, particularly IPTp, IPTi as well as discounted and free mosquito nets. Respondents commonly argued that the government had brought all the services with good intentions, particularly for protecting children. Over time during LAS and IES, mothers in all areas reported fewer and less severe child fevers and associated this with ITNs and SP for IPTi and IPTp. Service providers at district hospital 1 and dispensary 1 RCH clinics also linked ITNs and SP for IPTi and IPTp with decreasing cases of malaria episodes reported at health facilities.

> *"Indeed, our government favours children who are born these days. Our fellow elder mothers have been envying us because in the old days there were no free nets and tablets at health facilities." (Female FGD)*
>
> *"These nets and tablets have reduced the hassles of waking up at night to administer paracetamol to sick children." (Female FGD)*
>
> *"Recently we have been receiving fewer sick children than in the past years, especially during the rainy season like now." (PHN)*

Local traders played an important role in enhancing the uptake of subsidised mosquito nets, because they felt that the business was profitable. For example, a discount voucher agent at village 6 reported how he visited households and local market places to urge his fellow villagers to get the vouchers from clinics so that they could buy subsidised nets from his shop, sometimes on credit. Surprisingly, some agents partly expressed their support to freely distributed mosquito nets, which they described as not a major threat to their business. One of the shopkeepers supported the campaign, arguing that in his villages he knew some households where mothers could not afford subsidised nets. Moreover, he was happy because even his two children had received free nets.

Nevertheless, shopkeepers were apprehensive following the introduction of free nets, as detailed below under 'barriers to uptake'.

6.2 Barriers to uptake of services

6.2.1 Community attitudes

A few mothers, whom the WT and other female FGD participants earmarked as non-users of routine immunisation services, reported that that they had avoided taking children to clinic. Among these were women who had conceived shortly after delivery, and who were stigmatised due to the belief that if a nursing mother conceived, the existing baby would be breastfeeding on dirty milk. All data collection strategies, in both individual interviews and FGDs, revealed a shared cultural norm among all ethnic groups that such mothers exposed their babies to poor health. Others among the non-users had negative perceptions about some preventive interventions.

During IES at dispensary 1, I attended funeral of a two-year boy, who belonged to the same clan as a resident WT's husband. Before burial, a religious leader preached to a crowd gathered at the residence of the child's grandparents. The preacher, among other issues, discouraged a habit of associating deaths with witchcraft or anyone's mistakes; instead, he said, people should consider such events as God's plans. Later on the same day, I found some female visitors, at WT's courtyard, talking about the just-ended burial. One of them said that the child had been frequently ill since birth, after his mother conceived again soon after giving birth to him. When I talked to WT two days later, she said that the preacher on the burial day was aware of some relatives who blamed the mother for both witchcraft and conceiving while the child was still very young. However, the WT thought that the parents had wrongly left the child ill for about a week, under management of a traditional diviner and spiritual healer from another village, instead of seeking care from a hospital.

According to a TBA in the same village, avoiding sexual practices soon after delivery was an integral part of taboos that every girl learned in the compulsory initiation ceremony known locally as *unyago*. The TBA and some mothers in FGDs and interviews revealed a widespread belief that sexual practices during breastfeeding could contaminate the mother's milk, and hence weaken and eventually kill a baby.

> *"During our days, a woman would feel very shy if she conceived while breastfeeding because that was an indicator of negligence. However, a new generation of women is no longer observing the traditional norms because of family planning services at hospitals. Consequently, they end up feeding their babies with dirty milk." (TBA at village 1)*

A mother at village **9** aged around 45 years, reported that her boy aged 3 years had never received a measles vaccination. She had stopped going to the clinic because she thought she would be stigmatised by other women as she had conceived while breastfeeding.

> *"I used to feel very bad at clinic, because of such a shameful action to conceive while a baby was yet to walk. Other mothers pointed fingers at me whenever I got saying, 'amemshibia mtoto' i.e. she has conceived while her baby still breastfeeding. Such things hurt me to the extent of deciding not to take him to clinic after five months. That child is now three years old and I regret that he is the only one among my five children who missed the nine months [measles] injection."*

At village **6**, a single mother of five children reported that she had only taken her last child (a 2-two-year old boy) once for an immunisation and decided not to take the child to clinic anymore because she thought there were no benefits. The mother claimed she disliked the experience of her previous three children, who developed swellings on their shoulders and thighs after immunisation. She thought that her last child had better growth compared to others of the same age who attended the clinic regularly. Moreover, this mother was boastful because her child received a free ITN in the just-ended campaign despite not having an RCH card. She had claimed that fire had destroyed her house with the children's RCH cards and when she got a new one the ants destroyed it.

Adherence to child and pregnant women's preventive interventions intended for DOT was questionable, when received for home administration.

My observation at the district hospital and a dispensary in IES areas concurred with results from interviews and FGDs that several mothers had avoided taking SP for IPTp or administering it as IPTi, when they received it for home administration. A few mothers near the district hospital showed me some SP tablets that they kept in their houses instead of taking them or administering them. Some of them reported that had not taken the drugs because they were not ill. Some WT also reported that fathers had questioned the logic of administering SP to healthy children, while they knew it as a drug for treating sick people. Moreover, there were reports that some grandmothers and other women discouraged against IPTp because they believed that mothers who used such interventions might have large babies that would need to be delivered using episiotomy or caesarean section.

Most mothers liked DOT for IPTi or IPTp. A few gave excuses to health workers that they had not eaten or their children had recently been ill and used other drugs, in order to get the drugs for home administration, and some threw the tablets away. As shown in chapter 5, some mothers, in individual interviews and FGDs, also expressed their concerns about shared cups and spoons for administering IPTi and IPTp. Although it was common in all areas for people to share cups in the households and social gatherings, mothers feared that shared cups and spoons at health facilities might transmit fevers. Moreover, a few mothers expressed their dissatisfaction with weighing procedures:

> *"I will not take my child to KN, dispensary again because they disappointed me. Before leaving home, we bath our babies and dress them well because we want them to look neat. Clothes preserve human dignity. I feel bad 'when a child remains naked'. To me, exposing a child is like when an adult undresses in front of people here at hospital. Such person will be despised" (Mother, at clinic 1)*

6.2.2 Unmet expectations at local health facilities

The findings from individual and group discussions as well as my observations suggested that lack of diagnostic services at health facilities somehow influenced the choice of vaccination points among mothers in the study areas. Several mothers interviewed at a district clinic said they had not taken their children to nearby dispensaries of the lack of diagnostic services and qualified service providers. Similarly, female FGD participants in village 7 reported that they had personally taken their children to the health centre or district hospital for both immunisation and better treatment.

Providers' attitudes

During LAS and IES, the WTs at village 1 and village 11 described their own experiences, and those of other women, as victims of repeated miscarriages which, unfortunately, lacked sufficient answers at health facilities. One of these WT reported having personally experienced three miscarriages, followed by care seeking at a reputable private dispensary at the town centre. The WT said that the service providers at the private dispensary had failed to reveal the cause. The WT decided to consult a traditional healer who explained that she had *mizuka, mashetani* (demons). Thereafter, the healer started treatment with a traditional medicine made by dissolving a piece of paper scribed in Arabic into water, locally known as *kombe* or *zinguo* for continuous use until her next pregnancy and then after delivery both for her and her newborn.

There were some complaints about health workers' negative attitudes towards community members, and particularly mothers at RCH clinics. Consequently, at some places such attitudes led to unfriendly relationships between service providers and clients. For example, WT and mothers at dispensary 1 said that their former PHN accused mothers of being illiterate and therefore unable to recall what she taught in health education. Mothers also accused her of talking harshly at clinic and being unwilling to help them if they went

into labour after working hours. As a result, mothers applauded, which is very unusual, and others openly said they did not want her, when she told them at clinic that she would be leaving for a 3-year nursing course. Another shocking example was the way mothers in the FGD at village **6** happily commented on the fate of a local provider who delivered a stillborn baby after an episiotomy.

> *"It is very good that she [nurse] also lost a child in a shameful way as she tells when it happens to us. If a woman loses a baby during labour, that nurse says that we kill babies because we are too lazy to push. Before that happened, some of us feared that she might expose our labour secrets if we told any truth at clinic. Now we know that she was also lazy and she cannot push a baby, just as she insults us." (FGD participant, female group in village **6**)*

Similarly, data from village **6** show that mothers frequently lamented about two nurses who were not fair and ended up in confrontation with mothers. For example, a WT at village **6** reported during LAS that one conflict emerged at an outreach clinic after the unfriendly PHN irritated mothers of young children who had been waiting for services since morning, because she was too tired to attend them.

According to the WT, one mother dared to tell the PHN that she had a bad reputation and the mothers hated her because of her arrogance. The PHN and mother exchanged words and nearly fought before some other clients reconciled them. After reconciliation, the WT reported that a PHN threatened to take action against the mother if she attended her clinic again. Mothers regretted that sometimes they felt inferior and lacked confidence to ask or respond to questions at clinic because some providers reacted harshly to their questions or while attending them.

> *"The same nurse also once denied me family planning pills which I requested before I conceived this baby [WT's youngest child]. She insulted me in front of other mothers at clinic, where I started crying a lot all way back home. Since then, I do not feel happy when I find her vaccinating at clinic. I kept this secret without telling you in the previous visits because I was not sure if you might not tell her and make my life difficult in future." (WT village **6**)*

> *"One nurse once insulted me as she asked in public, Do you have a brain or not? Why have you just conceived within a few months since you had miscarriage?*

Then I responded to her, truly I do not have a brain, but I share a bed with my husband. He is not my brother; how could I just sleep with him without conceiving? After all, why could I protect myself while I do not have a child? I need a baby!" (FGD with mothers at village 7)

There were also complaints in FGDs at one about a nurse who would throw an RCH card on the floor as a punishment for mother to pick it, if , for example, the mothers did not respond after the nurse called the child's name, as often happened when the clinics were overcrowded.

6.2.3 Unavailability of services

Mothers in exit interviews and group interviews concurred with service providers that sometimes children's illness influenced the decision to take them to health facilities for both preventive and curative services. Some mothers hesitated to comment when I asked if they would still have taken their children to the clinic has the child not been ill. A mother of a 3 month old from NY said in an exit interview that the distance to a district hospital (about 12 km away) was too far to travel just for preventive services alone. In the absence of illness, the mother said that she could have waited until services resumed at her local dispensary.

Other respondents also expressed their views concerning preventive services and treatment-seeking practices:

"I am glad now because after growth monitoring and vaccination, I took my child to a clinician who ordered blood test. The results have shown that my baby had two malaria parasites. Therefore, the clinician has prescribed these six tablets (COARTEM). Unfortunately we do not have diagnostic services at dispensary 3." (Exit interview with a mother of a 10-year-old from village 3 on the way from a district hospital)

"Some of us like coming to district hospital, because we can also check fever, get laboratory examinations and drugs, unlike what we normally get there at our dispensary." (Mother in a group interview at a district hospital)

"When mothers miss services from our dispensary, we ask them to take their babies there at the district hospital. Nevertheless, they prefer coming to hospital 1

because they believe it will be easy to get other services if a need arises. They know if a child has fever, it will be possible to get laboratory services here unlike other dispensaries." (NA from dispensary 3)

"Other mothers just wanted to go to a district hospital. We were vaccinating here, and you can even prove by checking from a book where we keep records. We know they say there are more services there, such as drugs and examinations!" (PHN at dispensary 4)

As already shown in previous sections, there was occasional unavailability of services at local health facilities in many study areas. Such situations forced mothers to seek services at more distant facilities, as happened in one district. Based on the responses of mothers and observations of RCH cards at health facilities and in the community, immunisation-seeking behaviour was affected if it was a long way to alternative facilities, especially in situations where mothers were unable to travel due to their illness. Mothers' illnesses constrained utilisation of services, even when fathers or other relatives were willing to take the children to clinic. My own observations near dispensary 1 and district hospital 1, as well as responses in FGDs and interviews with mothers in the community showed that a mother's role in seeking services was associated with breastfeeding. Service providers and mothers valued the importance of breastfeeding for both the baby's nutrition and soothing purposes. During observations at dispensary 1 clinic, the NA often blamed mothers whose children cried after vaccination for not soothing them through breastfeeding.

During IES at both RCH clinic and in the paediatric ward of one district hospital, I met several children with incomplete records of previous and due vaccinations, whose mothers sorrowfully pointed out that they had been ill and that either their husband's or other family member's support was limited by the distance. For example, a mother of a 6-month-old boy from NY village with an RCH card showing the records of constant growth monitoring and only DPT HB 1 and polio vaccinations at the age of 6 weeks, said:

"I was very weak after delivery but my husband took this child to dispensary 3 in November, December last year and January, February and March this year. The nurses weighed the child but vaccines were only available once. My husband could not take the child to either health centre 4 Health Centre (~ 15 km away) or here (equally far away) because he could not breastfeed the baby if he cried." (Mother at hospital 1RCH clinic)

Moreover, delayed administration of services at health facilities exposed the children to the possibility of missing the re-scheduled dates, for various social and economic reasons, according to a few mothers who reported such incidences in interviews at TH during IES. One of them said,

"I went there (hospital 1RCH clinic) twice last month, for 9th month [measles] vaccination, but in the first visit they said that vaccines were out of stock, while in the second visit there was only one PHN who postponed immunisation because she was too busy. I was asked to take my child back again on at the end of last month [when the child would be 10 months]. I have not gone yet [at 11th month] and I will not go this month because I have to visit my mother who was bitten by a snake in the fields where there is no clinic." (Mother interviewed at home in TH, November 2006)

6.2.4 Migration and father's role

According to responses from various respondents, some children did not utilise preventive interventions because of reasons such as lack of father's support, travelling away without RCH cards or carrying a mosquito net. Some mothers, who were visiting the IES sites, said they left their mosquito nets because it was a common practice to travel with a net. One mother reported that her child had not been using a net for nearly a month while they were visiting relatives at another village. She indicated that suffering while travelling was accepted, as she used a Swahili expression, *"Msafiri kafiri"*, i.e. *"Traveller is a worthless person who is subjected to suffering."*

Migrant mothers would likely not take their children to clinic if they had travelled without an RCH card because they feared that service providers might be harsh to them.

During observations at hospital 1 clinic, a 7-month-old girl had not received her DPT HB 3, which was due at the age of 3 months. A mother of this child said that they travelled

away to attend a traditional dance, but she forgot the card in village 1. Furthermore, in the paediatric ward at a district hospital, some mothers reported their children had missed vaccinations because they moved to villages without health facilities. A PHN at district hospital 1 RCH clinic thought that mothers whose children missed immunisation services were also just lazy, otherwise, a child could be vaccinated anywhere if they travelled with their cards.

The results from interviews and observations during IES implied that most of the irregular users of RCH clinics were children of single mothers who could not afford the *"local official and unofficial charges"* that were widespread in the study areas (see chapter 5).

Generally, few fathers brought their children to clinic for either routine immunisation or growth monitoring services as well as the campaign-based interventions. Such fathers reported that they were divorced, or their wives were either sick or had gone ahead to farms. Unfortunately the sometimes fathers took children to nearby clinics but services were unavailable, therefore they had to delay getting services after their sick mothers recovered. The common expression was that unlike fathers, while travelling away, mothers could both feed and soothe a child when necessary.

6.2.5 Misuse of health interventions

Data from LAS and IES attested that some villagers misused mosquito nets and insecticide that they received in the campaigns and at health facilities. For example, at village 6, a resident WT's diary showed her personal observations and conversations in the community about villagers who had thrown away insecticide, which they received in the campaigns. Similarly, a WT at village 7 reported her personal observations and conversations about mothers and other villagers who had either thrown away or given out insecticide, which they received from clinic for re-treatment of mosquito nets. The WT

was aware of villagers who had used insecticide as pesticide in their vegetable gardens. The WT thought that mothers who threw away the insecticide were ignorant and needed more health education. Nevertheless, she thought that there were other priorities. Likewise, soon after the measles and free nets distribution campaign, a few other WT told of villagers who either threw away the insecticide or sprayed it in their houses against bedbugs and ants. In an informal talk during IES, a shopkeeper at village 1 informed me that he had personally applied mosquito insecticide as a pesticide on his sunflower garden and he knew other villagers who had harvested more after they applied the same insecticide.

The district health board chairperson in one district said that he was aware of youths who were misusing mosquito nets as football goal nets in his district, because their clubs could not afford sports gear. Nevertheless, the chairperson believed that only a few people misused the nets and insecticide compared with those who complied. Thus, he recommended that the government should mobilise more funds to supply mosquito nets to all citizens, instead of only focusing on young children and pregnant women. These observations and discourses matched the views of a WT, who commented,

> *"I think to them (villagers who had applied mosquito net insecticide as pesticide) mosquitoes are not a major issue compared to destruction of their crops because food is very important for someone's health" (WT village 7).*

Another misuse of health interventions was attending outside the scheduled time. Mothers in most of the sites complained about health workers who mistreated them whenever they attended clinic after peak hours, without taking time to understand that they had other obligations in the house, especially fetching water.

> *"We wake up at 3am and come back after 8am from fetching water. Thereafter, we have to prepare our babies, by washing, dressing and cooking porridge for them to eat so that they will not be crying at clinics. These entire tasks take time. When we go late, a nurse becomes furious like a buffalo while she knows the real situation. The nurses have money to buy water that is why they do not understand us." (FGD, mothers in village 8)*

6.2.6 Local politics

As already outlined in chapter 5, there were issues of local politics, manifested through mistrust between villagers and their leaders, community leaders and service providers, and between service providers and mothers in some areas. There were also issues related to lack of representation of women of reproductive age in decision making/influential structures. My observations and interviews with health workers and other respondents in different settings revealed the effect of local politics on service utilisation, as illustrated by the example from a district below.

Illustrative example 13: Local politics and service utilisation in one district

In the earlier stages of observations at a district hospital clinic and in the paediatric ward, I observed several RCH cards with gaps in the due vaccinations. An elderly father of an admitted child in the paediatric ward exposed how local politics constrained uptake of services due to prevailing mistrust between a councillor and villagers in his village in ward 5 (located more than 10 km from the district hospital). According to the elderly respondent, ward 5 had two villages, one in the upper area and the other on the lower area with reliable water from a natural spring and adjacent Ruvuma River. The councillor was from the upper dry village. Villagers from the lower village suspected that the councillor had not only influenced the government to build a dispensary at his village but also had blocked initiatives to build a dispensary in the lower village.

> *"We have water but they force us to take our children to a place without water where a midwife forces mothers to bring water with them when they go to dispensary. The councillor does not want to come in our village because he knows that we must ask why he diverted that dispensary to his own village while he knew that the dispensary requires water. Recently, he blocked our request in the district*

council, where we requested support from TASAF[7], although we were ready to volunteer. Therefore, we have warned our wives not to go there until we build our own dispensary. Why should they bring water while we have it in our village? We are serious about that and as we are talking, there is a resolution in our village for every household to contribute Tshs 20,000/= [~ US$20]) for construction of the dispensary. (An elderly male villager from village 12)"*

Another element of local politics was the lack of, or very little, representation of women of child-bearing age in decision-making and other influential structures, according to my observations and interactions with various leaders and community members during IES. For example, neither a health board (DHB) chairperson nor ten ward chairpersons from the women's wing of an influential party were aware of IPTi even after two years of its implementation. Similarly, all of them said that they were too old to recall the schedule for routine child immunisation (EPI). These respondents blamed the CHMT and various projects for introducing interventions in their areas without sensitising them. Interestingly, many group participants in the discussion with party leaders concurred with their fellow who said,

"I would have known about these issues (IPTi and EPI schedule) if I had a child to take to clinic. Unfortunately, I am now a grandmother without any obligation to follow what happens at clinic. However, we believe that mothers get all services well because so far there are no complaints in the community." (Chairperson of an influential political party's women wing in one district)

The DHB chairperson praised the organisers of the discount voucher scheme for closely involving the DHB members in sensitisation and evaluation activities, unlike with IPTi, which he said he heard about accidentally during the recruitment of field interviewers for final evaluation of IPTi in his district.

"After hearing that researchers had arrived to recruit the residents of my district, I convinced them and our DMO that it was important for me to participate. That was where I learned about Mkinge (IPTi) for the first time. I also played a vital role that facilitated project objectives to recruit the real residents of this district. Otherwise, there were many intruders from all over Tanzania would have taken our positions." (DHB chairperson in one district)

*[7] TASAF [Tanzania Social Action Fund] was a government agency, which funded construction of roads, health facilities, schools and water services in collaboration with local communities. The communities contributed in kind.

6.3 Discussion

6.3.1 Health system factors

A relatively easy access to health facilities within 5km in the study areas has been shown to contribute to good utilisation of health services in southern Tanzania, compared to other settings in Africa [201]. Mothers from these areas were able to decide the time to take their children to clinics, unlike their fellows from remote areas, who often arrived early and left the clinic late. Remote dispensaries also more frequently lacked vaccinations due to supply problems, as shown in chapter 5. As a result, mothers from these areas either travelled far to seek alternative services or simply waited. This compromised the adherence to vaccination schedules. Similarly, if vaccinations were postponed, as reported in chapter 5, mothers were not always easily able to return to the clinics. Therefore, health system failures contributed to low uptake of child preventive services.

Many children are exposed to the health system at health facilities or in the community during health days (VHWs). Clinic attendance can become a missed opportunity if weighing takes place but the children do not receive their due vaccinations, even when they are available. These instances were largely blamed on VHWs for weighing children without advising their mothers on vaccinations. The HO thought that the VHWs had a narrow focus, just thinking of weight and no more. However, when taught they were able to deliver vaccinations contrary to the initial plans, as seen in chapter 5. Salaried staff also sometimes forgot to give vaccinations because of their heavy workload and on the same basis; they avoided DOT for IPTp and IPTi. All the same, the found evidence that some mothers had not either taken IPTp or administered the IPTi-SP at home, suggests a need to address uptake of the intervention among providers as it effects extend to the intended users. Situations where some mothers and fathers queried why healthy children should take SP when it was for those who were sick may suggest the gaps in the BCC strategy

for IPTi, that it did not address both fathers and mothers. Therefore, it is necessary to consider a strategy that addresses the noted gap as well as the impressions that some providers deliberately informed mothers that IPTi-p was an antipyretic (detailed in chapter 8).

6.3.2 Why do mothers seek preventive services: carrot or stick?

The 'stick' and 'carrot' factors

Women felt a social obligation to seek preventive services in the study area, as is also detailed elsewhere [67]. Apart from the desire to avert a child's illness and the associated burden of caring for them, women also took their children to clinics to portray themselves as responsible mothers. Such an image was important, as responsible mothers were more likely to get married and be respected in the community. The CORPs used such criteria while ranking applicants for the post of community-based informant (WT) for the IPTi acceptability study. Such rewards for mother's good behaviour in the form of good response from service providers and community could be termed as carrots for seeking preventive services. As a stick, women were vulnerable to abuse by service providers and a lack of respect from community if a child became sick and was without proper immunisation records.

The value attached to the RCH card forced mothers to take their children to clinic, although it also kept some away. Service providers were reportedly reluctant to attend sick children who had an RCH card that was not complete for immunisation and growth monitoring. Their mothers were subject to abusive language and were sometimes made to pay unofficially for treatment. The RCH card had further implications for mothers. A mother would have to pay an unofficial charge for a replacement card if the earlier one was lost or shabby. In this area, RCH cards were also required for ascertaining a child's age during campaigns, census and school registration. These findings are similar to those

from Uganda where an RCH card has been termed as a passport [202]. This study also found unofficial charges on mothers' ANC cards, as found elsewhere in Tanzania [116]. Thus, the unofficial charges and other negative behaviour from providers regarding the RCH and ANC sounded sticks. Such sticks RCH cards deterred mothers from seeking timely preventive, delivery and treatment services in southern Tanzania if their cards were lost, shabby or incomplete.

Culturally, the local communities in the study area thought of pregnancy, childbirth and childhood as the most risky stages in life. The existing gap in traditional forms of protection encouraged the acceptance of modern preventive (protective) methods, such as ITNs, IPTp, IPTi, EPI and other services, as complementary protections. Such findings are similar to those from Gambia, where children used modern services at the same time as using Talismans [203]. This may explain why there were fewer rumours around the child health campaigns than happened with other mass drug-administration campaigns for filariasis and trachoma. Rumours have been reported to affect the uptake of family planning services in Cameroon, food aid in Zimbabwe and research-based child health interventions in Mozambique [89, 204, 205]. Nonetheless, similar to other African settings, as detailed in chapter 8, there were initial rumours on Coartem and broadcasted news about genetically modified mosquitoes as a plot of foreign nations to eliminate the population [204].

The findings also show how the perceived benefits of IPTp, IPTi and ITNs enhanced the utilisation of such interventions. Reducing sleepless nights was a relief to mothers who used to wake up to care for children with fevers. There were general comments among mothers that there were less sick children after the introduction of these interventions than ever before. Moreover, there were very rarely concerns about safety, e.g. of SP for IPTp

and IPTi. These responses were not only useful in suggesting the acceptability [28], but also confirmed the content of BCC materials for IPTi [67].

It is worth noting that there were friendly service providers, whose interpersonal skills encouraged mothers to ask and answer questions and to utilise preventive services. A good client-provider relationship has been shown to enhance uptake of services in different settings [197]. Social networks also encouraged care seeking especially among the neighbouring mothers. They also expected to meet friends and relatives at clinics.

Profit was the carrot that motivated the local retail agents and community leaders in this study to play active roles in community mobilisation about subsidised and free ITNs (delivered during campaigns). However, as shown in chapter 5, eventually the local agents thought the free ITNs were a betrayal by the government because of a notable decline in the voucher business. There was not enough time to follow the local agents in community mobilisation.

Sometimes, mothers unwillingly accepted the services provided at health facilities. As shown in chapter 5, mothers perceived that sharing cups and spoons for administering IPTi and IPTp might transmit unspecified fevers. As a result, some mothers pretended that they or their children had not eaten so that they could take IPTp or IPTi doses away for home use. However, the use of IPTp or IPTi at home in this area was not guaranteed, as has also been found in other parts of Tanzania [28, 116]. Often mothers lacked confidence to ask about vaccinations. In most cases, they expected health workers to make correct decisions about child immunisations. Mothers played a passive role, and went home with questions unasked.

Social determinants such as migration, mothers' insufficient understanding of full immunisation and a lack of involvement of fathers affect uptake of preventive services, as

found in Bangladesh, Ghana, Mozambique, Gambia and Tanzania [203, 206, 207]. In this study, many mothers sought immunisation and other services regardless of their understanding of the immunisation schedule. Nevertheless, mothers in Tanzania do face constraints in utilisation of services, even if they are well-informed [208].

Migration occurred predominantly because of divorce, visiting relatives, for funerals, traditional dances, to seek care at a distant health facility or traditional healers. Migrant mothers often did not have RCH cards and therefore they lacked the confidence to seek preventive services. Sometimes, migrant mothers wished to take children to clinics but were unable due to illness. Many reported that they lacked support. The study has shown that there were home visits to severely ill patients. Further studies are needed to understand the magnitude of the problem and what is needed to help sick mothers in seeking care.

Regarding use of ITNs, elsewhere in Tanzania, mosquito bites to women during funerals have been shown to be part of mourning and an expression of perseverance. Therefore, women are discouraged from travelling with or using mosquito nets during funerals. In this study, a mother used a traditional proverb that a traveller is a worthless person, implying that suffering while travelling away from home was accepted.

Social norms also constrained mothers from taking children to clinic. There was a stigma from both service providers and fellow women against mothers who conceived while breastfeeding. This effect of social norms and beliefs that degrade women is also described elsewhere [51, 79].

Taking a broader view, sometimes mothers conceived after services providers denied them family planning, as shown by the findings. Research is needed on how to empower women to demand services. Likewise, appropriate measures, including warnings and

BCC, need to be taken against service providers who deny mothers family planning services on the grounds of unofficial charges or for any other unethical reason.

A lack of diagnostic services at dispensaries sometimes forced mothers to avoid their nearby facility and go to district clinic where they anticipated such services would be available. Equipping lower health facilities, with rapid tests for example, could help to address the unmet needs of mothers who expect holistic services, including weighing, vaccinations and diagnosis as well as treatment if necessary. However, these tools could mean increasing the workload of the already busy and few service providers. Nevertheless, as shown later in chapter 7, and building on the experience of the survey teams regarding malaria and haemoglobin tests [65], VHWs could be trained to help in different tasks at health facilities.

Poverty was critical issue constraining service utilisation, especially among children of teenage mothers and those in unstable relationships. Unfortunately, these mothers mostly delivered at home. Some service providers charged unofficial penalties for issuing child health cards to those who delivered at home. Thus, these mothers often delayed taking children to clinic because of such charges and abusive language from providers. Poverty, unstable relationships and teenage mothers were factors affecting service utilisation in all study areas, as in other parts of Tanzania [34, 65]. Therefore, efforts are needed to help poor mothers and children gain confidence and access to these health services.

Another barrier to utilisation concerned differing priorities. Rural communities in the study area used the insecticide distributed for treating mosquito nets as insecticide for food and cash crop production. These priorities were locally more important than net treatment. Issues of mistrust and local conflicts among service providers and community leaders also hindered service provision and utilisation. For example, in one instance

fathers warned their wives against taking their children to a clinic that a councillor had allegedly influenced the location of, although there was water shortage where it was situated. Research is needed on ways to help harmonise the relationship between service providers and community, and among the community members. Harmonisation of relationship may require advocacy for service providers to relinquish their superior roles, value the poor and become aware of differences in opinion between them and their clients [197].

Community representatives could help in improving service delivery and utilisation, if they knew their roles and had the capacity to participate in making and influencing decision [209]. The DHB chairperson and leaders of a women's group from an influential political party, were unaware of IPTi, child immunisation services and other associated interventions. They were too old to follow the issues of immunisation and other child health services. Village leadership constituted more men than women. It was therefore clear that women of childbearing age were not part of the decision-making structures where they might express their voice and influence decisions about services despite being the most users.

Conclusion

Relatively good access to health facilities, friendly service providers, and the existence of carrots as well as sticks for utilisation, enabled mothers to take their children for preventive services. The carrots included perceived benefits of modern interventions when situated into local practices to protect pregnant women, social contacts and gaining a good reputation. Furthermore, mothers were socially obliged to seek preventive services in order to avoid difficulties in the community and at health facilities. It seems that the value attached to the RCH and ANC cards was widespread all over Tanzania. Unfortunately, the RCH card not only facilitated service access but also hindered mothers

and children, particularly the poor, from seeking both preventive and curative services, due to the unofficial charges attached to it.

Other barriers to uptake included the social stigma associated with conception while breastfeeding, lack of diagnostic services and lack of trained providers that led to delayed or missed vaccinations. Moreover, children sometimes missed available preventive services despite being in contact with salaried staff or with VHWs, although this was most often blamed on VHWs. Lastly, local politics and mistrust among service providers, villagers and community leaders affected both delivery and uptake of services.

Chapter 7

The Role of Village Health Workers (VHWs) in Child Health Services

7.1 Introduction

There is no doubt that a shortage of qualified personnel in developing countries hampers effective delivery of preventive and curative interventions. The socio-economic characteristics of societies play a key role in determining the ability to train, employ and sustain qualified personnel. Since the Alma Ata Declaration of 1978, there has been a renewed interest, to use and understand the roles of village health workers (VHWs), and the challenges facing their use, in the delivery of preventive and curative health services. In 1991, the government of Tanzania, in collaboration with UNICEF, introduced the Child Survival and Development Programme (CSPD) that established village-based VHWs in selected districts. All districts in Mtwara region, including two included in this study were part of the first CSPD programme. Nevertheless, there is a dearth of published information about VHWs in Tanzania.

This chapter presents the findings on the roles of VHWs from qualitative data collected through interviews, focus group discussions (FGDs), group interviews and participant observation in rural southern Tanzania.

7.2 Intended roles of VHWs, recruitment and strategies for retaining them

Intended roles of VHWs

In this study, both a DMO from district 3 and a HO from district hospital 1 associated the origin of VHWs with the CSPD in their districts. These respondents concurred that the VHWs were originally supposed to work with village and ward health committees on

matters concerning child health and environmental sanitation. However, according to another DMO, VHWs' origin was different.

> *"We tried to introduce VHWs in some areas through their village governments. Selected VHWs attended three weeks training on environmental hygiene and growth monitoring children. The VHWs were supposed to go back to their villages and work with village health committees in line with guidelines from the ruling party's election manifesto. While in their villages, the VHWs are responsible for seeing that toilets and water sources are clean, for assessing nutritional status as well as participating in growth monitoring and vaccinations during outreach activities conducted in their villages." (DMO)*

Strategies for retaining VHWs

There was a lack of local initiatives to fund the VHWs, who remained unpaid and often, moved villages.

> *"As you know in our area, a woman may get married repeatedly to more than three men who live in different parts. That has happened to some VHWs in our villages." (HO)*

> *"However, they [VHWs] are no longer as active as they used to be in the past, when they received bicycles, growth monitoring scales and some allowances during seminars from UNICEF. Therefore, in my opinion, the central government should find a way of motivating them. We cannot afford to include them in the district council budget." (DMO)*

> *"Our village governments lack money, although they know a responsibility to pay the VHWs. Such a situation somehow disappoints the VHWs; because they know the Nurses, with whom they work together at dispensaries or in the community, get salaries." (Influential political party women's wing leader, district 2)*

7.3 Recruitment of VHWs and socio-demographic characteristics of VHWs

The findings suggest that village authorities pioneered the recruitment and placement of VHWs at health facilities. Village executive officers (VEO) advertised the posts, received applications, appointed VHWs and in turn handed them to the facility board chairperson who handed them to health facility staff. None of the VHWs reported having undergone an interview or endorsement through local decision-making structures such as village government or health facility committee. Respondents also hinted at local mechanisms to replace VHWs.

"While in my village, I saw an advertisement stating that a young female was required for volunteering at a dispensary in XX Ward. Then, I wrote my application letter and submitted to my VEO, who accepted me on the spot. My VEO then handed me over to chairperson of the dispensary committee. I started working here at the dispensary after the chairperson introduced me to CO in charge." (VHW in a group interview)

"My VEO brought me to work here soon after I got a reply from village office that my application was accepted." (VHW3)

"I hear that recently there are places with new VHWs who the village leaders recruit to replace those who leave the post because of moving away when they get married." (HO)

Demographic and socio-economic profile of VHWs

Observations and discourses with VHWs in two villages, as well as an interview with an HO, gave the impression of a typical VHW having gone through at least one divorce and remarriage. Nonetheless, a few VHWs were in long relationships. Most of the VHWs involved in this study had dependants who included their children and parents. Some people viewed VHWs as income earners and hence, expected financial support such as loans. However, VHWs lacked any reliable income. They were preoccupied with difficulties in meeting their own and their dependants' needs (clothing, hairdressing, food etc). Table 6 shows the characteristics of VHWs interviewed in two villages of district 1 and district 2.

Table 6: Socio-economic characteristics of VHWs

	Sex	Age Group	Education	Marital Status	Dependents	Income generating activities
VHW1	F	30-40 years	Primary School	Divorced	Two School children, staying with VHW's parents	Tailoring and trading (soap and cigarettes)
VHW2	F	20-30 years	Secondary Education	Unmarried	One child, staying with VHW's parents	Maize farming on a hired half an acre piece of land
VHW3	F	< 20 years	Primary School	Unmarried	None	None
Former VHW (VHW4)	F	30-40 Years	Primary School	Divorced from two partners	Three children, two of them at school staying with VHW's parents	Subsistence farming on own land
VHW 5	F	40-50 Years	Primary school	2nd wife in Polygamous marriage	None	Subsistence farming
VHW 6	M	40-50 Years	Primary School	Married	Wife and three children	Subsistence farming

Key: M = male; F = female.

7.4 Actual roles of VHWs in service provision

VHWs work at health facilities and in the community beyond their originally intended roles.

Illustrative example 14: Actual roles of VHWs

During observation at a dispensary, three VHWs each helped the NA in specific roles at the OPD and the RCH clinic. The VHWs dispensed drugs, weighed children and pregnant women at the RCH clinic, prepared IPTi, gave it to children and filled records in MTUHA books. Through discourses with various villagers, leaders and a former VHW at a dispensary, it became apparent that in the absence and sometimes presence of salaried staff at the dispensary, the former VHW had been prescribing drugs, giving injections, dressing wounds, providing ANC and EPI services as well as assisting at childbirth. On a

few occasions, I found the same VHW conducting the outreach clinics where she weighed and vaccinated children independently or with less experienced VHWs. During participant observation at one dispensary, I also found that VHWs helped the salaried NA in conducting home-based care services for severely ill villagers. On one occasion, a less experienced VHW returned joyfully on the bicycle, from supervising drug use to two villagers, whom the NA described as TB and HIV patients. The VHW informed the NA in my presence that one of the two patients took all tablets without vomiting as had happened a day before.

In the villages included at one time in the CSPD project, mothers sought vaccination services from RCH clinics. However, on so-called "child health days", VHWs weighed children and provided nutrition counselling to mothers in their villages. The same VHWs also worked together with salaried health providers during outreach clinics when vaccinations and weighing took place in their villages.

I saw the former VHW and two suspended, less experienced VHWs participating in a vitamin A supplementation at both a health facility and villages served by one dispensary in June 2007, with the former VHW supervising at one of the posts. As a supervisor, the former VHW administered the services and compiled a report from her post. At the end of the day, she joined other supervisors at the dispensary for report compilation. Between April and May in the same year, I had seen VHWs participating in campaigns against trachoma, malaria and lymphatic filariasis. The DMOs from two districts implied that the VHWs in their districts played different actual roles.

> *"VHWs help during various campaigns and during child health days when services take place at villages instead of health facilities. During these days, the VHWs have been very helpful especially in growth monitoring and nutritional counselling to mothers. There is another secret that the VHWs update the national census in their areas at almost no cost." (DMO)*

"Instead of temporary attachments, some salaried health workers at dispensaries thought they got people [VHWs] to work for them. That is how it turned to be that the VHWs remained at health facilities instead of serving in the community. None of those VHWs at the dispensary is there because of our directives. Initially, the district leadership directed that VHWs should not be at health facilities except where there is a serious shortage of health workers. Now, they are no longer required because we have already posted more staff where there was a serious gap, for example, a new Clinical Officer and a Nurse Assistant will soon be going to one dispensary." (DMO)

Illustrative example 15: Questionable services by VHWs

During my observation at one RCH clinic, sometimes the NA attended the OPD and ANC clients alone. Before the NA did the vaccinations, the VHWs assisted in weighing, record keeping, crushed SP and administered it to children as IPTi. On one occasion, two VHWs crushed SP for IPTi and mixed it with water in cups while the NA was attending ANC clients in another room. The NA suddenly entered in the vaccination room and spoke aggressively to a VHW who was crushing SP, *"Who taught you to give IPTi to children and just hand the cards back to mothers in my absence? Don't you know that they may escape vaccinations?"* This made the two VHWs panic and they started to ask mothers if their babies had received vaccinations. The NA walked out of the room in a worse mood as she said, *"no matter what happens, I am quitting now because you are confusing me."* However, the NA returned after a few minutes and started vaccinating children before the VHWs administered IPTi to them.

The HO and mothers from hospital 1, and the NA at dispensary 1, portrayed the VHWs as the sources of errors found in vaccination and IPTi records on the RCH cards and MTUHA books. Some mothers who received drugs dispensed by VHWS either had incorrect information on dosage or claimed that VHWs had not explained the dose. According to the HO, the DHB chairperson, VHWs and the influential political party women's wing leaders, these poor services were likely due to a lack of appropriate training in required skills and a lack of supportive supervision. A DHB chairperson,

women leaders, NA, HO and the VHWs themselves reported that VHWs in most cases weighed children without reminding their mothers about due vaccinations. In general, VHWs made mistakes because they lacked proper training.

> *"Those [VHWs] who weighed children at the village [during child health day] did not tell me that I should also take my child to clinic for vaccination. I also did not know when to take my child to clinic because the date of next vaccination is not marked on the card." (Mother at paediatric ward in district hospital II)*
>
> *"I am surprised to hear that the NA is sad because I released children without recording their ages. I did not know if the dates are necessary. After all, how could I just record the age without prior instruction?" (VHW during a Vitamin A campaign)*
>
> *"Before questioning their services, we must know if they get regular training in line with changes taking place under Health Sector Reform." (DHB Chairperson)*
>
> *"If it were within my ability, I would recommend abolishment of their [VHW's] services. First, they are a big source of the chaos that surrounds RCH cards. Sometimes they get RCH cards from health facilities in order to replace the lost or destroyed ones. Nevertheless, they fill them wrongly without having records from MTUHA book 7 where we record all particulars including vaccinations received. We also hear that they sell those cards to mothers although it is not supposed to be like that." (HO)*

Illustrative example 16: Perceived roles of VHWs

There was broad agreement among community members, leaders, a DMO and the VHWs themselves that VHWs were useful and needed in their areas. To my surprise, community members, including a village leader and WT, asserted that the former VHW delivered better services than the salaried NA at their local dispensary. The former VHW believed a single NA who worked at the dispensary needed VHWs because there were many tasks such as prescribing and dispensing drugs, dressing wounds, giving injections, attending pregnant women and those in need of family planning services and then weighing as well as vaccinating children. She also talked about keeping the records of vaccinations, IPTi, discount vouchers and other services both on RCH cards and in relevant books. The DHB chairperson, a DMO, women leaders and village leaders also underscored the importance of VHWs.

"I urged our NA to accept the two VHWs back at the dispensary after we forgave them, but she insisted that she could manage alone. Yet we hear that the same NA[8] complains to people that she is overburdened alone. We, the dispensary committee leaders will go to the DMO tomorrow or a day after, to explain the situation. We want our VHWs reinstated; otherwise, the DMO should bring the required qualified staff as we explained in the first meeting. Even if the VHWs may cause harm during treatment, it is better than just remaining without treatment or for someone [a patient] to waste the whole day at the dispensary waiting for minor services." (Dispensary committee chairperson)

"We make a good contribution to our community because there is a lot of work we are doing here at the dispensary. However, some people around us think that we receive salaries. Often, some of them may come to us on 30th day [i.e. end of month] asking for a loan of Tshs 5,000/= [~ $ 5]. Fellow women ask for a loan because we are always smiling and not complaining. They come straight, believing that you earned something, contrary to the real situation." (VHWs in a group interview)

"The former VHW was better at service provision than the salaried nurse was, just talk to mothers who happened to get her services." (Dispensary committee chairperson)

Illustrative example 17: VHWs at the centre of local politics

Both health workers and community leaders used the VHWs to give them information about the other group. Less experienced VHWs' gossip about health services led to mistrust among three of them working at the same health facility. It emerged that the VHWs reported different things on the same issues, within and outside a group interview session.

"If you remember, in that meeting [between VHW1, VHW2, VHW3 and myself], sister [VHW2's name] told you that everything is OK here. We hesitated to tell you the truth in front of our fellow [VHW1] because she could take our words to our mother [NA]. Certainly, the NA sells drugs, Depo-Provera injections and charges mothers for delivery services and then she blames two of us [VHW2 and VHW3]. We also did not feel free to tell you that the CO is more friendly and willing to instruct us than the NA. We expected that our mother could be close to us, because that is what our tradition is. Even at home, fathers are not expected to spend more time with their daughters compared to mothers. However, that is how our mother here [NA] treats us." (VHW2)

The VHWs said they had been in contact with their village leaders to discuss the issues happening at the health facility. One day, I saw a VHW holding a long conversation in the

[8] Villagers used different names to refer to the NA, also as a nurse midwife or dokta.

street with a dispensary committee member. The dispensary chairperson later disclosed that the VHW was complaining about a village chairperson who chose his wife to attend a lucrative workshop that was for VHWs. The VHWs also disclosed that the VEO had instructed them to write a letter to express their intention to strike for one week in order to persuade the local authorities to meet their demands. Another VHW reported that her village chairperson had asked her whether mothers paid for Depo-Provera injections before the councillor talked about the matter in a public assembly during an MP's visit.

> *"Brother H, who is my current village chairperson, sometimes probes and I have to respond because I am from his village and he is the one who can help me. Sometimes he asks if I got any allowance and if not, why? He also asks if mothers pay for immunisation and growth monitoring, and why. He also asks if mothers are charged Tshs 500/= [~$0.5] for family planning services, why, if I remember the exact date when a mother paid for family planning injection and if we [VHWs] got part of that money. I am obliged to answer to the best of my knowledge. Even if I would not tell the truth, the reality is obvious because charges on family planning issues touch men directly. Several times, I have heard mothers saying they requested money from their husbands in order to pay for family planning injections. Therefore, men would know by any means." (VHW1)*

7.5 Expectations of VHWs

Three VHWs said that they had applied for the post because the former VHW inspired them as their role model. These VHWs reported in a group interview that they joined their post with the expectation of improving their skills and earning some allowances (*hela ya sabuni or posho*) monthly or while attending workshops outside their village as they used to see the former VHW do.

> *"We were promised that after the initial three months of volunteering at the dispensary, we would be receiving a monthly allowance amounting to Tshs 5000/= [~$ 5]." (VHW1)*

> *"Advertisements showed that the successful candidates would attend three months training and thereafter get an allowance." (VHW2)*

> *"I did not have good fortune to join secondary education that could lead me to nursing course. Therefore, after seeing the advertisement, I applied with the hope of gaining skills in vaccination, wound dressing and everything that a nurse does, like sister H [former VHW]. We grew up with sister H, and I know that she learned everything by working here and attending various short courses." (VHW1)*

Illustrative example 18: Unmet expectations of VHWs

The VHWs, community leaders, health workers and mothers all reported that VHWs lacked both training and financial rewards. In particular, VHWs complained about the lack of promised training and allowances from their superiors, the government and local authorities (e.g. DMO saying they are not needed) and there was no clear avenue for expressing their concerns. They also complained (and I observed) about long working hours, and a lack of respect from NA who blamed them in public at the dispensary and in the community. VHWs had started their roles without clear information about their remuneration.

> *"We have never held any meeting with our superiors here at the dispensary and even the dispensary committee although that is where we could express our feelings. Whenever we try to request them to organise a meeting, they say, tomorrow, which has never happened." (VHW)*
>
> *"I have neither seen that allowance nor training since I started working here more than eight months ago." (VHW2)*
>
> *"They just mentioned there would be an allowance and training." (VHW3)*
>
> *VHW2: "Nobody clarified who would be paying us. I thought of my VEO, but to me the most important was to gain skills." (VHW3)*
>
> *"When we joined here there were issues of registration fees. Patients were supposed to pay Tshs 300/= [US$~0.3] per visit and our fellow, the former VHW, was responsible for keeping collections. At the end of month, there were calculations to know the costs that the dispensary incurred so that the balance could be for security guard and us [VHWs]. Even so, things remained tough on our side." (VHW2)*

7.6 Constraints, complaints and coping mechanisms

The VHWs found their working environment was very different from their expectations before they started the job. I found evidence of unmet expectations, poor attitudes of salaried workers towards VHWs and other motivational problems. Occasionally, both the VHWs and salaried health workers conspired with community members who approached them for unofficial services and offered payment.

Illustrative example 19: Constraints and complaints

The HO at a district hospital held that the VHWs were unreliable because they just served when they felt like doing so and could leave their village whenever they wanted because they had nothing to lose. At one dispensary, both VHWs and salaried workers occasionally blamed the others for discrepancies noted at health facilities. For instance, a VHW claimed that she learnt to charge unofficial fees from her seniors [NA and former VHW] and that the NA used to sell drugs and Depo-Provera injections. I observed the NA publicly accusing two VHWs of stealing drugs and selling Depo-Provera injections in the streets. The same two inexperienced VHWs complained to a local WT and me that the NA always favoured two other VHWs. The dispensary committee chairperson from the same area also hinted about the NA favouring one of the inexperienced VHWs, because the latter was loyal unlike others who used to leak secrets of unofficial charges and other issues to some local leaders. Occasionally, in my presence the VHWs and NA expressed verbal and non-verbal indicators of lack of respect and trust from either side. For example, two VHWs lamented,

> *"The NA hates the two of us and only likes our fellows [VHW3 and former VHW], that is why the NA went to VHW3's mother to persuade her [VHW3] to betray us after we jointly submitted a letter to our dispensary chairperson and clinical officer about our intention to strike for one week. Our fellow [VHW3] told us plainly that the NA and her mother required her to confess in writing that we misled her to join the strike." (VHW2)*

In contrast, the NA commented politely, after she realised her favourite VHW had made mistakes during the vitamin A campaign: *"my daughter [VHW3] forgot to record the age of children who came in the morning. It seems that she [VHW3] doesn't know that I asked mothers to bring their RCH cards to help in knowing the age of children."* The same NA sometimes talked furiously to two other VHWs in the presence of clients when they made mistakes.

> *"Now you see, I have always been warning you that all evils which you do will be revealed because people like this one (researcher) will keep coming here.*

Unfortunately, the bad things you do tarnish my name because I am the only salaried staff here. People already know some of you who have started adopting bad behaviour, pretending that you volunteer while you steal drugs. I warned you about asking money from mother. Now even our guest today has known about these shameful things. Some of you walk around in the streets giving family planning injections. Since you came here, I always wonder where drugs are going. Even that letter which some villagers wrote to the MP has some truth in it. There is one of you [VHW], who sell Depo-Provera injection in the streets. Now you see, someone demanded Tshs 500/= using my name while I am the one who tells mothers that a discount voucher for mosquito nets is available free of charge." (NA)

During participant observations, I confirmed that the NA disliked the VHWs partly because of perceived competition in social status. This NA also complained that one of the VHWs was boastful because she had secondary education. The WT and the dispensary chairperson had earlier informed me about the NA's complaints to different villagers that the VHW2 boasted about speaking English and pretended to be better educated than she (NA) was.

Thus, the dispensary committee chairperson had heard the NA mocking that she could not work with a more educated assistant (VHW2). The suspended VHWs lamented in the informal and formal discussions that the NA had spread rumours that they were proud. The same NA took revenge by spreading rumours that one of the suspended VHWs had HIV and the other one was an epileptic.

The VHWs in one village apparently depended on unofficial payments that seemed to be the norm at one dispensary. Two VHWs with children said they made some money from tailoring, petty trade and small-scale farming on a borrowed half acre of land. However, VHW3 lamented that her petty trade was constrained. Customers borrowed without repaying, while harvests in the fields were uncertain due to unreliable rains. They also depended on support from parents, mostly for food. VHW1 said that she got money for cosmetics, hairdressing and clothing. However, there were rumours that VHW1 received support from a new teacher in the village whom she expected to marry. She herself said

she could not imagine how to live independently. Moreover, two VHWs reported (and I saw) that they charged unofficial fees to mothers. As a result, there were doubts among some villagers and a NA about volunteering.

> *"I cannot go far from here because there will be no one to support me while volunteering there. Now I eat at home and my parents are taking care of other minor expenditures." (VHW1)*

> *"All this is sheer stupidity. Where have you seen free things these days? Those who volunteer need clothes, food and some of them have children. They must steal things from the dispensary while pretending that they are volunteering. Ask us, even a young child in this village will tell you that there are people who sell drugs from the dispensary in the streets. We hear that even the CO shifts drugs to his pharmacy in [name of a different district]. That is why I say they were right to strike. How could you feel, if you were somewhere doing the same or more duties while you are not paid anything?" (Opposition leader)*

> *"It is not surprising that the VHWs are involved in corruption; their boss [NA] is most corrupt. It is not a secret that in our village we buy drugs and child health services at the dispensary." (Shopkeeper)*

> *"That is why I happily released your fellow [former VHW] to be salaried somewhere else. Although it will cause a burden on me, because she already mastered everything as I taught her, it is not easy to live without a salary. That is why I always ask you [talking to VHWs], are you ready to volunteer? To me, it is not possible to be a volunteer in health service delivery." (NA)*

Doubts about volunteering occurred not only around VHWs but around also other village volunteers as well. While at a shop in IES village one evening, I saw a shopkeeper arguing with a security guard from a local dispensary. The shopkeeper was arguing about an outstanding debt since the security guard had taken batteries on credit for use at the dispensary. The security guard said the dispensary committee chairperson had taken money from the dispensary in order to settle the bill since several days before. Based on these claims, the shopkeeper and an opposition leader suspected that the dispensary committee chairperson, who was a volunteer, might have stolen the money for the batteries.

> *"That is why I say there is something bad in this district. How can you ask people to sacrifice their lives and their families by offering them voluntary posts? Now look, the dispensary chairperson has disappeared with the money for batteries." (Opposition leader)*

7.7 Challenges in retaining VHWs

There was a lack of local capacity to reward volunteers financially. The events leading to the departure of the former VHW and the suspension of two other VHWs from the same dispensary demonstrated the challenges in retaining VHWs without guaranteed means of rewarding them financially. Two months after completing the second round of IES in village 2, one of the suspended VHWs she had a new job, where she was earning Tshs 10,000/= (~$10) per month and free accommodation. The VHW expected a salary increment depending on her performance. She also liked the new employer for the friendly training given to her about drugs.

> *"To me the problem is our poverty, without which the village should have been giving something to appease those who volunteer." (Former VHW)*

> *"We need those VHWs, as long as there are strategies for helping them, but now they may have feelings that the government does not recognise their services." (Influential political party's women wing leader)*

Illustrative example 20: Experienced VHW who joined the private sector

Respondents, including a salaried NA, village leader, VHWs, a local female community-based informant (WT) and community members, reluctantly agreed to the departure of an experienced VHW from their dispensary. However, it was clear among all respondents that the former VHW had inevitably left her post at the government dispensary to join a private drug shop in the neighbouring village because of uncertain financial incentives. During my second round of IES in one village, a WT reported that a clinician from a nearby government dispensary, who owned drug shops in various places, had offered a monthly allowance amounting to (Tsh 50,000/= ~$50) to the former VHW. A local WT reported that mothers were not happy to lose the VHW because she knew everything that a midwife did. She commented that could do nothing about it because the village government was not paying her. The villagers felt that the drug shop would make a lot of money because people knew that the VHW was good.

"I am both happy and unhappy about the departure of sister H [former VHW]. I am unhappy because she was more experienced and I learned many things from her especially when our NA was reluctant to instruct us [new VHWs]. She [former VHW] was always ready to guide us. On the other side, she had a difficult life here with two children depending on her. Imagine, she was just earning Tshs 5,000/= [~$5] here and sometimes she only got part of it or missed completely. It was not easy to meet her own and children's needs. We have heard she is now earning a large salary amounting to Tshs 50,000/= (~$50) per month." (VHWs in a group interview)

"I am happier with my work now because I am no longer labouring for free as the village leaders treated at our dispensary. These days, I earn a generous salary of Tshs 50,000/= [~$ 50] every month and I am also learning. The one who owns that shop is a clinician who likes to hear that his business has a good reputation. Since I am the only employee there, he makes an effort to teach me about drugs. I have freedom there because he comes only at weekends." (Former VHW)

"In addition, my daughter [former VHW] who used to help me at the dispensary has quit. The village government was not paying her. They collect duty everyday from traders here in the village but they claim that there is no money[She mentioned two large shops in the village, several kiosks and food vendors, bicycle repairers, charcoal sellers, local beer clubs and fish sellers.] The former VHW has left a big work burden for me. Imagine, after training her for more than ten years she has just gone." (NA)

Illustrative example 21: VHWs suspended from work

The former VHW reported that a security guard and her had earlier been receiving monthly allowances from money generated through the Community Health Fund (CHF) when non-CHF members paid Tshs 1000/= (~$ 1) per visit at the dispensary. However, the DMO later ordered that all collections should be taken to the district council. The local leaders and salaried workers at one dispensary introduced official charges on weighing and vaccinations. However, this money, and the VHWs discontent with their nonexistent share of it, became the reason for the VHWs' strike and eventually led to their suspension from the dispensary.

"After our superiors counted at the end of month, they informed us that there was only enough to pay the security guard who had been complaining over working without payment for quite a long time. Therefore, when I left they had not paid me, and I am aware that even the new VHWs whom I left behind are not getting any payment." (Former VHW)

Two of the remaining VHWs reported that they complained to their village executive officers (VEO). One of the VEOs advised them to address their letter to the CO, with the following message, *"We have decided to strike for a week due to embezzlement by the dispensary committee"*. The VHWs thought that the village leaders would summon them to explain what they meant in the letter. However, their letter was perceived as offensive to the leaders.

> *"The word 'ubadhilifu' (i.e. embezzlement) is too bad. It means that we are corrupt. Can they prove how we misuse the dispensary funds? Anyone could use that letter to sue people here." (Dispensary chairperson)*

The two VHWs then received a letter (one of them showed it to me) signed by the dispensary committee chairperson stating, *"The committee has accepted your decision. You are not allowed to be at the dispensary until further notice."*

Later, the dispensary committee chairperson forgave the VHWs verbally after they apologised to both the committee and the NA. However, the NA maintained she would not accept the two VHWs because the DMO had instructed that they should not work at the dispensary. The same NA had mocked that she could not work with a more educated assistant (VHW2), as already shown above. On the contrary, the NA retained her favourite (VHW1). There were varying perceptions over the indefinite suspension of the two VHWs. The VHWs maintained that it was unfair to not pay the VHWs alone and evict them because they demanded their rights. Nevertheless, the former VHW blamed the VHWs for forcefully demanding payment, although she sympathised with them not being paid.

> *"What we saw as embezzlement there started from the fact that initially we accepted to volunteer wholeheartedly because there was no scheme i.e. source of fund for either the dispensary itself or its committee. However, last month we collected more than Tshs 24,000/= (~$ 24) from the syringes scheme and fees from RCH services. Contrary to our expectations, the dispensary committee chairperson and his secretary brought bad news to us [VHWs]. They said that the money raised was only for the security guard and that each of us should ask our own villages for our allowances. After we insisted on payment, the chairperson*

gave Tshs 1,200/= ($ 1) to one of us, and instructed the amount to be shared by three of us. We have never held a meeting with the dispensary committee since we started working. They would have called us instead of writing the letters." (VHW 1)

One of the DMOs insisted on the need for volunteer VHWs and security guards, although this was not favoured at village level. The same DMO also agreed that he had urged the village governments to mobilise funds locally while sending CHF collections to district councils. Although there were plans to send the funds back to dispensaries, the DMO said that it was not for paying volunteers. This DMO's remarks suggest a lack of support for retaining VHWs.

"If anyone has been charging for child immunisation and growth monitoring, that is wrong because no one has mandate to introduce fees for services exempted by the Government. Even if we remit their funds, that will be for other development activities or repairs not for security guards or VHWs. After all, the VHWs are not supposed to be at health facilities. At one dispensary, people just kept them on their own decision." (DMO)

7.8 Discussion

This chapter has highlighted the disparities between the intended and actual roles of VHWs in rural southern Tanzania, from recruitment through working conditions and management to retention. The VHWs expect respect, status and opportunities to learn skills, future employment at government or private sectors, and any form of financial gain. Although there was a system for recruitment and placement of VHWs, none of them had any contract or written terms of contract, which might have avoided their involvement in corruption and other undesirable behaviour. VEOs led the recruitment of VHWs and were the only village leaders mentioned in the recruitment process. This is likely to be because the VEOs are government representatives at village level. However, if no local salaried health workers were involved in recruiting VHWs (and no respondents indicated that they were), this might have given the impression that VHWs were superimposed, contributing to future misunderstandings with salaried workers.

VHWs were generally women with dependents, including children, parents and other extended family members, with few reliable income sources and were often in unstable relationships. Some villagers expected that VHWs should have been earning official income from health facilities; if not they were expected to become corrupt and demand payment for services. The VHWs in unstable relationships were particularly vulnerable. In the study areas, mothers in unstable relationships generally had a low reputation and lagged behind in seeking child health services in general.

Originally, the intended roles of VHWs in the study areas included participation in provision of growth monitoring and nutritional counselling services for children as well as environmental sanitation activities. However, we found no evidence of VHWs getting involved in environmental hygiene.

The actual roles played by VHWs included provision of curative and preventive services both at health facility and in the community. With good mentorship from a PHN, one VHW in this study had been prescribing drugs, attending injured patients, giving injections as well as attending women at ANC clinics and in child birth, providing family planning services, growth monitoring and vaccinating children at clinic and in the outreach clinics. She also kept records of services delivered. In the broader context, the VHWs in the two districts also had multiple roles such as conducting a census, nutritional counselling, supporting campaigns for Vitamin A supplementation and prevention of trachoma, filariasis, measles and malaria through distribution of free nets. Moreover, VHWs helped at OPD and RCH clinics and with home-based care for severely ill patients. VHWs performed these services not only under supervision but also independently at government dispensaries, in the outreach clinics on child health days and in the private sector. One VHW also mentored a new NA who invited her to help in record keeping etc.

The findings from this study concur with evidence from elsewhere in Africa, Asia and South America, where VHWs have contributed enormously to delivery of preventive and curative health services in programme and project settings [132, 133, 139, 141, 144, 156, 157, 160, 210, 211]. However, the VHWs covered in this study operated alongside the routine health services and lacked organised recruitment, training, placement and close supervision, supplemented by different sorts of rewarding mechanism. In this environment, it is particularly remarkable that one VHW in this study had been running a health facility in the absence of salaried clinical officers and nurses, as well as mentoring both inexperienced NA and new VHWs.

This study has also demonstrated the perception that VHWs could be locally useful regardless of their limited skills and questionable services. Salaried staff, village leaders and local community members suggested that losing their experienced VHW was a loss at the government health facility and a gain to the private employer, because many people trusted her services, which relied on her interpersonal skills and long-term on the job training. Respondents in one village thought the former VHW had been hired at a private drug store and was trusted under minimum supervision because she had won social acceptance in service provision compared to a salaried NA. Villagers anticipated that the former VHW would bring more clients to the private shop.

VHWs sometimes made mistakes in their work over documentation, preparing IPTi before knowing whom exactly needed it, requesting unofficial charges, stealing drugs and weighing children without checking what vaccines they needed. They lacked training, guidance and necessary supervision from salaried workers, their community leaders and relevant district authorities. Quality of care is known to be influenced by training, supervision and financial incentives.

The unmet expectations as manifested in power struggles and mistrust between service providers and community leaders and VHWs themselves, and the lack of financial incentives and training opportunities, and poor mentorship, threatened the sustainability of VHWs in the study areas. In this study, VHWs were at the centre of power struggles in the community and at health facilities. The accounts of four VHWs, who worked at one dispensary, have portrayed how VHWs were caught in the disputes among themselves and between salaried workers and community leaders, and between themselves and salaried workers. Both local community leaders and salaried workers misused the VHWs as personal informants. Consequently, community leaders (PHC committee members), VHWs and salaried workers were obsessed with inappropriate behaviours, which contributed to boring working environment and eventually unsatisfactory services, contrary to the anticipated roles of VHWs in contributing to the improvement of well-being in their areas. It appears that the recruitment and placement processes gave the village leaders greatest influence and left facility staff as mere recipients of VHWs. Consequently, it could be possible that service providers took revenge by maltreating the VHWs whom they suspected to keep closer ties with VEOs who appointed them.

It seems that the VHWs felt insecure and anticipated protection rather than rejection from the dispensary authorities. Whereas the community liked them, some salaried health workers perceived VHWs as a threat to them (were also insecure) when the VHWs had higher education or a closer relationship with village leaders. The NA claimed that the DMO had discouraged VHW services at health facilities. She herself restored one of the VHWs because of apparent news that she was loyal to her, but she would not restore the other two. The allegations suggested that the NA persuaded her favourite VHW to withdraw from the strike after she had expressed an intention to strike with the other two, in the same letter. Despite the local leaders forgiving the two VHWs and urging the NA

to restore them, the NA would not – blaming her decision on the DMO. The same NA spread rumours about the two VHWs being chronically ill, boastful, and corrupt and that they used to leak secrets from the dispensary to the health facility. Indeed, the same NA had vowed not to work with a VHW who thought that she was better educated. Such encounters illustrated the power struggle between a salaried worker and her favourite VHW on one side and local leaders and two VHWs on the other.

Certainly, problems of VHWs at village and health facilities emanated from higher authorities in health, in this case the MoH through to DMOs, for allowing the existence of VHWs at health facilities and in the community without clear written guidelines on their recruitment process, remuneration, and to whom they should be accountable and express their needs/concerns.

The impression was given from a DMO that a lack of sustainable rewarding and retention mechanisms for VHWs started from the onset of the CSPD programme in the study areas. Evidence from Musoma rural district in Tanzania, where VHWs started at the same time as in the areas of this study, shows that initially, UNICEF funded the recruitment and operational costs of VHWs, including training, provision of bicycles and other incentives. On the other hand, the district councils funded the transport costs and allowances of district CSPD steering committee members. So far, there is no literature showing why the initial funding strategy allowed this separation instead of there being coordinated management and funding of all CSPD activities and those involved in the districts. As reported by a DMO in this study, VHWs performance has gradually withered since the CSPD funding ceased. Equally, Mhamba[212] notes that the district steering committees survived only between 1992 and 2000 due to a lack of sustainability strategies for both the VHWs and committees. Supplementary information shows that the funding from UNICEF was not sustainable and required accountability standards that were impractical

among several councils in Tanzania. Hence, UNICEF blacklisted such councils, on the grounds of lack of financial reports within six months from the time of release of funds [213].

The findings have shown that locally there were critical views that those who recruited VHWs expected them to volunteer at health facilities routinely without financial reward, something impossible among adults with responsibilities. At the time of application, the VHWs implied that they had anticipated some allowances, training and a good working relationship. One unmentioned expectation was the unofficial charges that had been in place at the dispensary when the former VHW, whom others referred to as a role model, was still working at the dispensary.

Local authorities in one setting of this study introduced fees for RCH services, partly as a means to reward VHWs and health facility security guards. However, the fees had negative consequences on the VHWs as they led to their indefinite dismissal: they demanded payment from the fees which they participated in charging on child health interventions. While the DMO maintained that introduction of fees in immunisation was contrary to the government's policy, the findings have shown how the village leaders confidently claimed the mandate to invent such fundraising activities when there was no other option. This suggests that village leaders and DMO's dealt with health matters uncooperatively, leading to conflicting interpretations of policy and actions taken. It could be worth following up the aftermath of the user fees strategy after it initially failed to provide for VHWs.

Are VHWs abandoned?

VHWs in the study area are a legacy of CSPD program that did not lay sound basis for their sustainability. They operate without a project, program or government policy

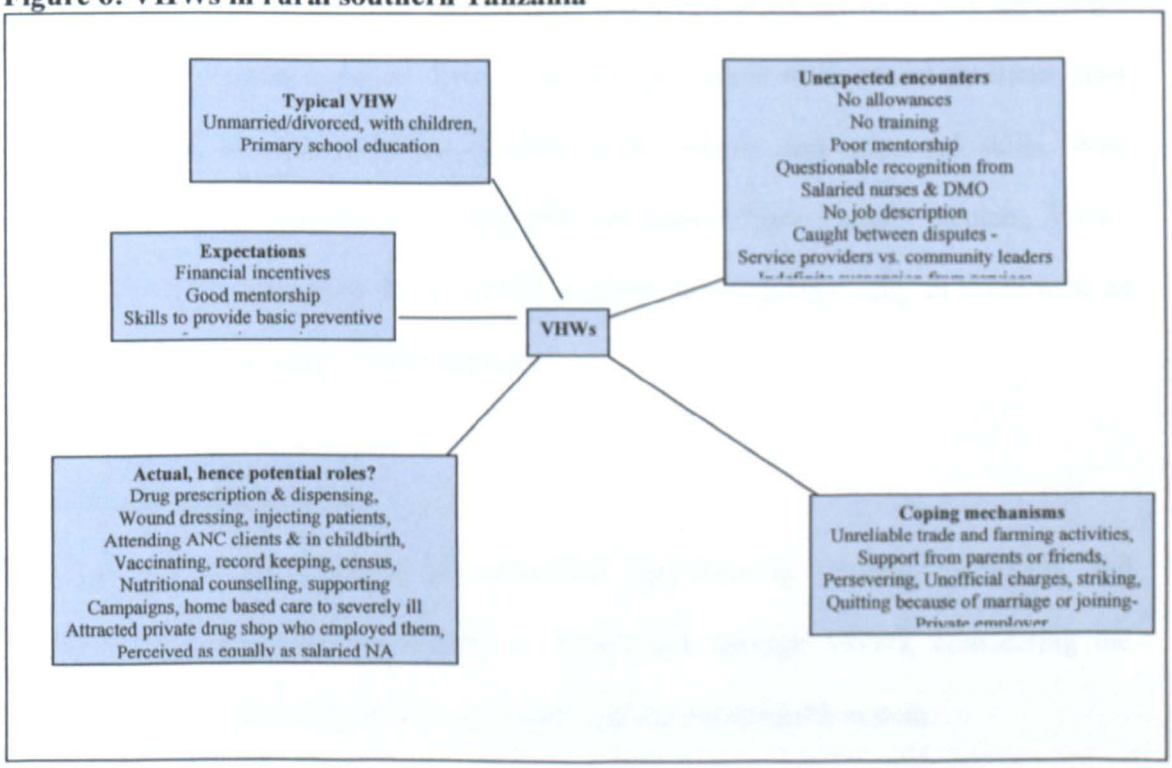
supporting them. Hence, they operated like orphans. There is very little literature to suggest who cares for VHWs in Tanzania, although they have existed for many years. None of those interviewed in this study, including village leaders, service providers, DMOs, a health officer and VHWs, had any written guidelines about VHWs. They had only anecdotal information about the origin of VHWs from the time of CSPD and knew that they were intended to help in weighing, nutritional counselling and hygiene. One DMO argued that VHWs should not be working at health facilities but in the villages. Nevertheless, the same DMO was responsible for services, including at a dispensary where a VHW had served for more than 10 years, sometimes attending clients alone. This suggests that either the DMO did not know who worked at each health facility or that the DMO was trying to hide the truth, because the VHW's position was unclear to the CHMT.

When it came to rewarding the VHWs, one DMO argued that they should be community volunteers, as should facility security guards. Probably, the DMO argued in line with the principles of Primary Health Care (PHC) as partly advocated in the Alma Ata Declaration, that communities should address their main health problems as well as participate in providing promotive, preventive, curative and rehabilitative services accordingly, in the spirit of self-reliance and self-determination [214]. However, VHWs in this study operated in ways that made volunteering impossible. Another DMO thought that the VHWs deserved financial rewards. He argued that the Ministry of Health should allocate money for them because districts lacked adequate funding. At village level, salaried workers maintained that volunteering in health service provision was unrealistic. The VHWs' socio-economic background meant that they needed a reliable income for themselves and their dependants, i.e. children, parents and extended social networks. Sadly, VHWs were a low priority – although the villages involved them in fundraising activities such as the local official charges on child immunisation services, they did not receive any of the money. To make matters worse, the fallout from this episode led to

their indefinite suspension. As already discussed above, it seems that the controversies facing rewarding and retention VHWs in Tanzania stems from the initial plans that introduced them.

Towards the end of this study, the councillor and village leaders showed me one of the sites for new dispensaries planned for construction in two of four villages served by one dispensary. The councillor reported that the new dispensaries must be in place before the year 2010, in line with promises of the influential political party during campaigns in the past three years. However, the councillor was pessimistic about human resources to staff the new dispensary while the existing facilities lacked enough health workers. The councillor joked that the VHWs (whom he mentioned by name) would become the (Mama X, name of current NA) of our new village dispensaries. Community leaders clearly viewed the VHWs as potential facility-based service providers. Figure 6 summarises the main issues concerning VHWs in the study area.

Figure 6: VHWs in rural southern Tanzania



7.9 Conclusions and recommendations

VHW's roles made them an integral part of the district health delivery system. The VHWs were socially acceptable to most community members and their leaders, despite quarrels with some service providers and some concerns among district level managers. However, the villages and districts were unable to reward the VHWs financially or through training. Their coping mechanisms involved socially and politically unacceptable actions, such as unofficial charges and local official charges on immunization and growth monitoring and other child health services, power struggles among service providers, community leaders and VHWs. There were management shortfalls manifested through a lack of guidelines on recruitment, the lack of any job description or accountability, or guidance on where and how VHWs could express their concerns and demand their entitlements. All these contributed to crumbling roles of VHWs, with them quitting in search for salaried posts or being dismissed indefinitely. Based on the findings presented above, the community perceived a need for VHWs, but lacked the human and financial resources to facilitate efficient management of this potential low-cost and appropriate supplementary human resource. Even when villagers apply to volunteer positions, they still anticipate benefits including financial gain, respect and improved skills. With improved financial rewards and supportive supervision from friendly mentors, VHWs could potentially contribute to delivering multiple services, especially in areas with an acute shortage of qualified health workers.

7.10 Research implications

Further studies are essential to understand and develop socially, politically and economically acceptable approaches to recruit and manage VHWs, considering the interests of the community, service providers and the entire health system.

7.11 Policy implications

- The recruitment process for VHWs should be more participatory, involving not only VEOs but also other community leaders and service providers.
- Where VHWs exist, the MoH should develop clear guidelines for recruitment, placement, retention, training, supervision and accountability.
- VHWs also need a friendly on-the-job learning environment, and respect.

Chapter 8
Information Flow about IPTi in the Context of Other Preventive Child Health Interventions

8.1 Introduction

Understanding the process of the flow of information about health interventions and behaviours of service providers and community can help in explaining the issues surrounding delivery and uptake of services. This chapter describes how information about IPTi reached different stakeholders and how such information shaped behaviours in delivery and uptake of IPTi in the context of other preventive interventions delivered through RCH clinics in rural southern Tanzania. Other interventions include IPTp, subsidised ITNs, and integrated child health campaigns with free mosquito nets, Artemether lumefantrine (Alu) and family planning services. The chapter also discusses the information flow for traditional protections. Data collection methods included interviews, FGDs and participant observation. The respondents included decision makers at national, regional and district levels, service providers and both male and female community members.

8.2 Routine flow of information at RCH clinics

Health managers and providers reported that health education was part of routine services at health facilities in all study areas. A Zone Nursing Officer (ZNO) earmarked health education as an expected routine activity before commencement of daily services at clinic, focusing on a specific topic repeatedly throughout the week. A HO at the district hospital reported at the beginning of participant observations that health education took place daily.

Most health workers at health facilities in all eight acceptability sites reported that they provided health education to clients according to predetermined schedules. A HO at a district clinic reported that there was a weekly schedule for conducting health education

to clients on EPI, nutrition, prevention and treatment of malaria, and issues related to ANC services. Supervisors from zone, regional and district levels were supposed to monitor health education sessions as part of supervision visits at health facilities. Observations and interviews revealed that sometimes providers tried to educate RCH clients about various issues on different occasions, such as health education at RCH clinics waiting venues, at time of vaccination, weighing, drug administration or any other moment when mothers were with them. The zone reproductive and child health (ZRCH) coordinator and a health officer at one district hospital made the following remarks,

> *We also urge the district RCH coordinators to ensure that they personally and other district level staff pay attention on health education. That is where our staff should remind the clients on matters such as prevention is better than cure, the importance of prompt care seeking for pregnant women and young children at home and in the community and also to educate them about new services available to them. (ZNO)*

> *Health education is our first responsibility after opening the clinic. For example this week, our main lesson is on HIV/AIDS, after we had one on malaria last week. By the end of this week, we [health workers] are supposed to have decided on the next lesson. (PHN at hospital 1 clinic)*

8.3 Constraints on flow of information about child health interventions

Health education sessions were less frequent at RCH clinics, according to mothers and leaders of the influential political party and behaviour observed during the in-depth ethnographic phase. Female respondents in the FGDs occasionally sympathised with health workers if they provided other services because they thought that inadequate staffing was a major obstacle to provision of both health education and other services to the large numbers attending at health facilities. However, many of them reported in interviews and FGDs that provider did not give them an opportunity to ask questions at clinic. Thus, respondents had mixed opinions on the conduct of routine health education sessions.

> *These days, it is common to see mothers of young babies sending RCH card with their friends in advance for queuing up. What they care about is just growth monitoring and advice if the weight is decreasing. No one wants to waste the*

whole day there because of health education. (FGD influential political party's women leaders, district 2)

Health education does not take place at outreach clinics where there are usually large crowds. (FGD influential political party's women leaders, district 2)

There is a need to increase more staff at our district hospital so that they can manage health education and attend us within a short time. (FGD influential political party's women leaders, district 2)

8.3.1 Unfriendly behaviour at work places

Unfriendly relationships in the work place formed one of several constraints on the sharing of information between project and district level stakeholders and among service providers. As shown in illustrative example 7 in Chapter 5, there was mistrust between the DMO and the RCH coordinator in one district. This mistrust also constrained the flow of information among CHMT members in the district. To illustrate, the DMO excluded the RCH coordinator from attending an IPTi feedback meeting, in which project team researchers reported the findings from a mid-term evaluation of IPTi coverage, drug resistance, morbidity monitoring and acceptability issues. The delegates discussed the results, as well as strategies to address the missed opportunities for IPTi when children had attended clinic. The district RCH coordinator thought that it might be all right for the DMO to exclude her because of their misunderstanding. However, she wondered why the delegates withheld the information from other CHMT members, not just from her. Unfriendly behaviour also prevailed among service providers at health facilities. For example, some providers who did not attend IPTi training either avoided learning from those who went, or learned but avoided dispensing the drug and documentation.

8.3.2 Timing for health education

During observations at a district hospital clinic, providers started health education around 10 am while some mothers had been at the clinic since around 7 am. These mothers said that they left their homes early in the morning so they could get services in the early

hours. This category of mothers and other respondents thought that health education lessons started at a time when both mothers and children were exhausted due to hunger and a long wait at clinic. Overall, mothers and fathers living near health facilities often attended clinic in the middle of or after health education sessions. Those who attended late claimed that they had other priorities, especially household chores (cleaning, cooking, eating, feeding children, washing and fetching water), or they deliberately avoided the anticipated long waiting time for services or questions arising from health education sessions.

> *I decided to come late in order to avoid questions after the lesson. Some of us do not feel comfortable to talk in public. Sometimes a provider may tell you off when asked questions. (Mother at clinic)*

> *My house is not very far from here [clinic], but I could not rush to come here before preparing porridge for myself so that I may take any drug in case they give us here today. They normally encourage coming after we have eaten something because there are three white tablets [IPTp?] which we must use here. (Mother at clinic)*

> *As you know, some of us men do cook because we are singles. My wife and I separated and she left a child with me. (Father arriving late at clinic)*

8.3.3 Uncoordinated flow of information

Some providers presented uncoordinated content during health education sessions at RCH clinics. For example, one morning the PHN started by distributing plain RCH cards to about 60 mothers who were at RCH clinic one morning. Contrary to her introduction that the lesson was going to be about *viuatilifu* [mosquito net insecticide], the PHN started by explaining the meaning of three colours on the rear of the RCH card. Then she taught about vaccinations [chanjo] and asked mothers which vaccinations babies should receive soon after birth. Finally, she also explained the meaning of Mkinge and the age at which children should use it. Apart from two mothers who answered the PHN about the RCH card's colours, none of the rest could recall information about insecticide, vaccination schedule or Mkinge when asked at the clinic a few minutes after the lesson.

In an informal talk one week after the health education session, the HO recalled that the PHN had confused mothers with uncoordinated messages:

> *Do you know why the mothers found it difficult to understand the lesson last Friday? They were confused because the PHN mixed up many topics. Our mothers in this area need simple and clear messages on one topic. After that lesson, other mothers said they did not understand.* (HO)

When we asked about IPTi, mothers would use various different terminologies. In FGDs and individual interviews, a few mothers mentioned or understood the brand name MKINGE before we prompted. Several would occasionally mentioned SP *za watoto*, i.e. SP tablets for children, or panadol and shonadol (antipyretics). Some thought service providers had told them that IPTi was for cooling fever, which children commonly got after immunisations. A few WTs said that IPTi was Fansidar[9], as they had seen it written on the boxes containing Mkinge tablets. The very few who were able to read wondered why the posters said children should receive SP, instead of Fansidar as written on the boxes. On many occasions during participant observations, I heard the HO and PH at a district hospital using the term SP tablet (*kidonge cha SP* i.e. SP tablet) while giving IPTi and vaccination in the immunisation room. The same providers frequently talked about "sindano ya Surua", i.e. measles immunisation while referring to measles vaccinations. Most mothers naturally mentioned measles immunisation or the 9th month preventive injection.[10] Therefore, different providers decided to use different concepts and this probably contributed to low awareness about Mkinge.

8.3.4 Distractions

Sometimes, clients would talk amongst themselves during health education sessions, and at times providers had to warn them because of the noise. Some respondents admitted that they could not recall health education messages because they were not paying attention.

*[9] The SP used for IPTi was in the boxes branded Fansidar.

[10] Literal meaning of vaccination administered to children at 9th month.

Others claimed that they could not hear because of the noise during the session. From observations and interviews, some clients used the time to share important news.

> *Frankly speaking, I was listening to this mother of an infant [nanunu] as she was giving me a very important message that her child has a dislocated arm. I have to inform her [mother's] father who is my neighbour that his grand child is sick so that he decides what to do.* (Male parent at RCH clinic)

8.4 Facilitators to the flow of information

8.4 1Attitudes towards preventive interventions

Overall, the combination of interventions targeting young children simultaneously encouraged positive remarks among health workers and various respondents in the community. Mothers talked in the FGDs about IPTi and IPTp and mosquito nets reducing the burden of waking up at night to care for sick children. Others viewed these interventions as complementing each other, in the sense that mosquito nets protected against malaria at night while SP tablets treated malaria acquired from mosquito bites during the day.

> *Our colleagues who have stopped getting children and our mothers have been saying that these days the government highly favours our children and us when we get pregnant by offering free medicines and mosquito nets. They even envy us when they here that we have been in discussions with you (researchers) about our health, what problems we face.* (Female FGD village 9)

8.4 2 Impact of research in promoting understanding of IPTi

The research activities conducted during IPTi implementation influenced the behaviours of service providers in delivery of health information and services at RCH clinics. During a second round of IES, health workers at the district hospital clinic had initiated strategies to correct previous records on RCH cards as well as to carefully record the new IPTi and corresponding vaccinations. Female FGD participants at village 2 reported that service providers had retained their children's RCH cards after vaccinations in order to correct them. During participant observation, I observed a pile of RCH cards at one clinic (in hospital 1) as providers continued to retain more RCH cards after vaccinating children. In

the next FGD sessions, the same clients brought the same RCH cards, with matched dates of IPTi and DPT HB2, DPT HB23 and measles vaccination, although IPTi was previously not recorded. These initiatives took place after some service providers had heard from mothers that researchers had been checking the RCH cards, during LAS and household surveys. Service providers talked about their efforts as ways of pleasing researchers:

> *We are trying to check because some children received Mkinge but by mistake, it was not either recorded on RCH card or MTUHA book. Therefore, we want to make sure that we match all information on the cards and in that book.* (PHN, hospital 1)

> *We have agreed to collect all RCH cards from mothers in order to crosscheck the records with MTUHA book and what mothers tell us about vaccination and IPTi that children received recently. Without reviewing these RCH cards, when researchers pass in the households again they will get a bad impression that we are not giving IPTi. You personally remember, the other day when you found many cards with gaps for Mkinge while children had received vaccination.* (HO)

> *How do you see our cards these days, are not they attractive. These days we ensure that each card has complete records of IPTi on the exact days when children received corresponding vaccines.* (PHN, hospital 1)

Information about IPTi also spread through preparations and implementation of two IPTi household surveys in the five implementing districts. Community leaders participated in sensitisation meetings and in selecting the survey teams in their districts. Selected interviewers also learned about IPTi as part of the interview process. Many household members reported that they knew about IPTi through survey teams and informed consent forms delivered to household members from the project. A ward councillor in ward 1 praised survey team members for taking time to read the consent forms and project information sheets with household members before interviews. The councillor and village leaders managed to communicate by telephone with project management using contact details given on the information sheets. This communication enabled the leaders to resolve conflict amongst village government members over one-day allowances given for guiding the researchers.

A DHB chairperson in one district (hospital **1**) reported that he knew about IPTi when he was involved in screening the prospective interviewers for the scheduled IPTi survey. The same DHB board members claimed that they had not followed up the EPI and IPTi implementation because no one had invited them to relevant seminars.

> *I am glad that the IPTi project leaders accepted me in the interview panel as a community representative. In that session I was able to read a leaflet about IPTi, which guided the written and oral interview for applicants after they read it. My role was helpful to ensure that only residents of our district won as the researchers intended.* (DHB chairperson)

The study found behaviour changes among service providers in the course of three-week participant observation at a district hospital RCH clinic and in the community, apparently due to the presence of researchers in the area. In the first week, many respondents in FGDs and interviews reported that they had been to clinic but there was no health education session. In the second week, when a local WT visited the clinic for observations she also found that there was no formal session in the first three days of the week. On the fourth and fifth day, some service providers, including a PHN whom mothers had earlier described as arrogant, conducted inspiring health education sessions after they had learnt from the WT that researchers were in their areas. For example, the PHN unusually rewarded mothers during the education session.

> *While heading to clinic this morning [Wednesday], XX [HO] asked for a ride on my bicycle, and on the way he asked "are your people [IPTi researchers] still around?" He also asked if other mothers and I kept reporting that they were not happy with RCH services. Thereafter he gave a lesson about IPTi. At the end, the HO asked question and clapped for two mothers who recalled what he just taught.* (WT, village **2**)

> *Today [Thursday], XX [name of PHN] was extraordinarily happy and did new things during health education session. After one mother answered a question on the meaning of Mkinge, the PHN told mothers "pasha pasha" [warm up your hands], then choma [Swahili expression of clap]. In addition, she gave Tshs 500/= (~US$0.5) to the mother, for her baby's soda on the way back home. Before clinic started, the same PHN called me [WT] in the family planning services room and requested, "Please write well about us and when they want the names of people to attend seminars. Please do not forget my name."* (WT, village **2**)

> *I arrived there a bit late but I found the nurse asking mothers what is Mkinge? It took so long before one mother responded in a low voice. The nurse heard what*

that mother said and instructed the rest of us [mothers at clinic] saying "Mfagilieni" [Swahili expression which meant clap for her] to our fellow because she had answered well. In addition, the nurse gave that mother a calendar and some money to buy soda for her child. I really wish that others clapped for me, and next time I must impress the nurse too. (Mother interviewed at home)

In the third week, when I conducted participant observation, service providers conducted health education at the RCH clinic-waiting venue. I also saw some of them talking to mothers during weighing and vaccination. However, these health education sessions varied in terms of content and organisation. On one morning, as detailed previously, the allegedly arrogant PHN started the education session by talking about *viuatilifu* [mosquito net insecticide] before moving on to discuss the colours on the RCH card; then she taught about vaccinations [chanjo], and finally she explained the meaning of Mkinge and the age at which children should use it. After the lesson, the PHN rewarded two mothers who answered her questions on the three colours and their meaning. Firstly, the PHN ordered other mothers to clap those who answered questions before she gave them leaflets about Fendona[11] insecticide. The PHN told mothers that the leaflet would entitle them to quick services at ANC and family planning clinic and at the OPD section.

The following day, the HO, without any teaching aid, gave a short lesson about the meaning of Mkinge and the age at which children should receive the doses. Many mothers raised their hands to answer the HO's questions. The HO praised the mothers for their attentiveness and asked them to clap for their fellows who answered the questions.

Informal interpersonal communication between health workers and RCH clients took place after or in the absence of a formal health education session. While in the vaccination room, health workers sometimes explained vaccinations and accompanying services such as discount vouchers and IPTi. For some health providers, who interacted

[11] Fendona is a brand of mosquito net insecticide, which health facilities issued to RCH clients who had earlier received subsidised ITNs during pregnancy.

with mothers in ways that enabled them to ask questions and obtain clarifications, their motivation was to impress researchers; other providers were simply easily approachable:

> *Are there plans to roll over IPTi going to the whole country? I want to know in-case trainers will be required among us, who attended initial training and have been implementing it for a long time. After training, we came to educate our fellows in our department. Every RCH staff now knows how to administer IPTi, which means that some of us can go out to train others, if required.* (HO)

> *If you are good to them, they will always come to ask. Mothers know whom to approach and who to avoid when they want clarifications. Many of them feel happy to face me because I treat them like their grandmother.* (Elderly PHN 3)

> *One mother whose child received Mkinge with measles vaccination came to ask me why her child had not received Mkinge during DPT HB 2 and DPT HB 3. Having established that the child was from outside the intervention area, I clarified that her child had missed other IPTi doses because the child received vaccinations outside implementing areas.* (PHN4)

8.4 3 Information sharing between service providers and clients beyond health facilities

For some providers and health workers, the flow of information continued beyond the health facility. For example, while at village 1, I observed parents arrive at the NA's house in the late evening to report persisting fever in their child who had received IPTi and vaccination earlier that day. The NA reassured them, and urged them to cool the fever by sponging with a cooled piece of cloth and to administer [antipyretics] that she had dispensed that day. After the parents left, the NA said that it was common for villagers to follow her after office hours to seek help. During home visits together with the WT, the WT advised a mother of a child who had fever to consult the NA at home.

The interaction between health care providers and community was frequent through networks such as neighbours, friends, relatives, fellow believers, to mention just a few of the circumstances where conversations took place. For some respondents, health workers were close relatives or friends. During IES, I met a male nurse from the district hospital at one mother's house in TH. The nurse, who claimed to be an uncle of the child, informed

me that he had just advised a mother not to administer IPTi (which she received on the same day from clinic for home administration) to her four-month-old child.

> *After listening from mother and checking on both prescription card and RCH card, I realised that the same child has already used SP today and therefore I have advised the mother not to give IPTi until after two weeks. Otherwise, the mother was thinking to give IPTi after two days and that could lead to side effects.* (Nurse from district hospital)

8.5 Information about IPTi before and during implementation

The flow of information about IPTi started before and continued during implementation through a series of meetings with stakeholders at national, regional and district levels, and with health facility staff [67, 69, 188] in line with the project time line (Figure 7). The meetings with stakeholders from national to district level involved not only presentation of research results but also critical discussions, concerns and recommendations. These provided a wealth of useful, practical feedback on strategy development, communication and training materials, and approaches to documentation and delivery of IPTi [69]. The input of these stakeholders was also useful in development and pre-testing of the BCC strategy, including a brand name, key messages and images for awareness creation.

> *Could you clarify if the mothers perceived fever as an outcome of vaccine itself or due to piercing by an injection that providers use to inject the vaccine? If you do not have adequate data to share now, follow that up as it could help us in developing appropriate health education messages.* (Stakeholder in first feedback meeting)

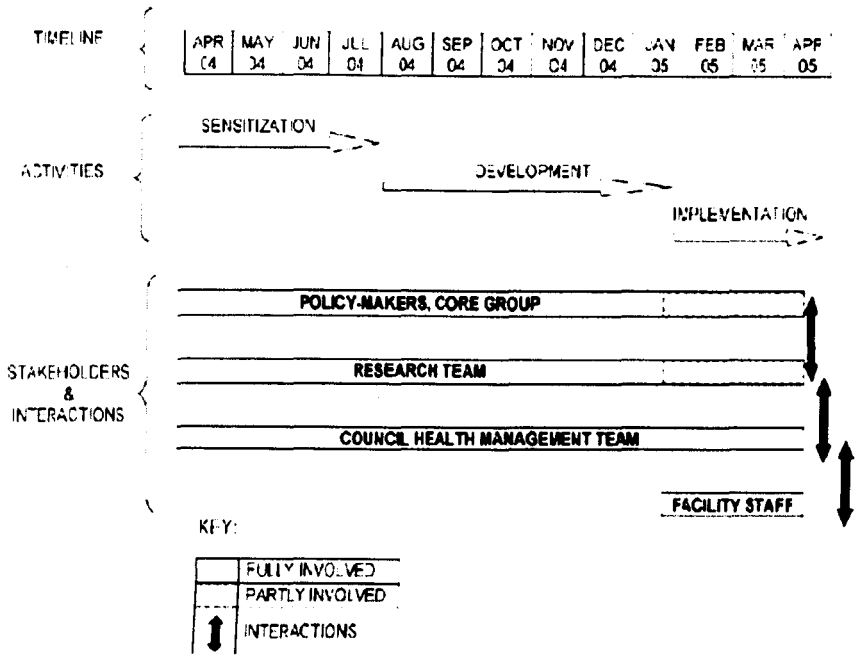


Figure The approach to the development and implementation of intermittent preventive treatment in infants (IPTi) – the activities undertaken, timeline and stakeholders' involvement and interactions.

Figure 7: The project time line. Source: Manzi et al 2008

The regional-level decision makers felt like initiators of the IPTi project in their areas and committed support based on positive feedback about the IPTi project from the grassroots.

> *My fellow RC and I met the leaders of this IPTi when we were travelling from overseas. We invited them to our two regions because we have the most malaria and child deaths in this country. It is up to you health experts in our regions and districts to give the researchers every support needed in our areas because we need them to save our children. We have a building that we are going to offer to IPTi so that it becomes their base in this zone.* (RC in Region 1 region, addressing the regional stakeholders)

> *Today (after initial feedback meeting at regional level) we are giving you this compartment [space for office at regional hospital premises]. It will be like a story of a man who asked for a place where his camel could hide a nose, then a head and eventually the whole camel was in. You will get more space as our health experts and community give positive views about IPTi.* (Acting RC, Region 2)

Initial flow of information about IPTi in selected districts started through sensitisation meetings with CHMT members and local government leaders. The CHMT members included district medical officers (DMOs), district cold chain officers (DCCOs), nursing

officers (DNOs), reproductive and child health (RCH) coordinators. Among other issues, the RCH coordinator and DCCO would be responsible for delivery of supplies to each facility, checking stock, reviewing record-keeping and supporting front-line health workers [69]. The local government leaders included the District Executive Officers (DEO), Ward Executive Officers (WEO) and Councillors [Madiwani] (the elected community representatives from all wards) as well as village leaders.

Discussions about IPTi with stakeholders, health managers, decision makers, health care providers and community representatives continued throughout preparations and implementation through regular feedback sessions. For example, the IPTi researchers occasionally presented feedback to councillors, WEO and district decision makers in the comprehensive district planning meetings. The CHMT members and local government leaders discussed IPTi during preparation and execution of baseline household and health facility surveys and the rapid qualitative study (RQS). The concept of IPTi also initially reached many resident health workers and villagers through their active involvement as data collectors or respondents in the preliminary research activities at health facility and community level. One of the community leaders said,

> *These researchers from Y [name of IPTi implementing research organisation in southern Tanzania] are quite wise, they travel all the way from their offices and come to remind us what IPTi means, and how it has been reducing malaria and obstacles faced. It seems mothers are happy about their children using that drug because we tell them what we hear from experts that what children get is safe. We as community representatives like such approach and not just coming to ask our people questions and then running away.* (Councillor ward 1)

8.5.1 Information flow about IPTi among service providers

Before IPTi implementation, service providers from the intervention facilities, including a clinical officer (CO) in charge and a public health nurse (PHN), attended a one-day training organised by the IPTi project. The regional and district health management team members led the training with support from the project implementer and other project

researchers. There were several training materials for health workers, including the guideline booklet, posters, modified child health cards, stickers to record IPTi, modified tally sheets and a job aid with step-by-step instructions for IPTi administration, which included questions to ask before and instructions to give after administration. After training, health workers took the posters to display at clinics, a job aid, RCH cards, and a MTUHA book for recording IPTi. The project implementer and CHMT supplied more in subsequent visits at health facilities. During participant observations at health facilities, some PHNs and a HO from TH said that the IPTi training had been very useful because apart from the meaning of IPTi, how to dispense it and record keeping, they also learnt about monitoring and documentation for adverse drug reaction.

8.5 2Information flow vs. provider behaviour

The information generated during participant observations at a district hospital and dispensary clinic revealed mixed behaviours among service providers following the IPTi training. Some who attended the training were less committed than others to implementing the training guidelines. Some passed the knowledge on to colleagues who were not at the training, while others did not. And some providers were reluctant to learn from those who attended the training.

For example, the NA at dispensary 1 reported that she found it difficult to administer IPTi because she had not learnt from the former PHN who attended the training. At the time of participant observation, the former PHN was away for a three-year training course. The NA claimed that the former PHN was not very cooperative before her departure; otherwise, she could have shared the knowledge with her. On the other hand, the NA said she did not take the initiative to ask the former PHN because they were working in different departments, one at the RCH clinic and the other at the OPD section. As a result, the NA admitted that after she replaced the PHN, she had to learn from the former VHW

who previously worked with the PHN at clinic. There were several times when I found the NA struggling to match the records of dispensed vs. received stock of IPTi. She once commented, *"I have to make sure that I balance these numbers because when he comes, the IPTi implementer inspects every detail and must demand explanations if the records are inconsistent."* Eventually, the NA acknowledged after six months that subsequent supportive supervision visits by the IPTi implementer improved her performance.

One PHN and the HO at a district hospital clinic concurred in different informal and formal individual interviews that a PHN who attended training and other RCH staff either avoided administering IPTi or administered it contrary to training guidelines. These providers had not only issued IPTi for home use instead of administering it as DOT at the health facility, but also avoided keeping records or they did so wrongly on RCH cards and relevant books.

> *Several children missed IPTi recently, while two of us who attended training were away. PHN1 had to attend a funeral in another district while I was on leave. Despite having trained them, our fellows here [PHNs] sometimes vaccinate children but avoid administering IPTi because they claim it is not easy to keep records on the RCH card and MTUHA book.* (HO, district 1 RCH clinic)

> *You know, I must spend these two days to prepare a report because when he comes, that XX [IPTi implementer's name] counts each tablet and asks many questions when there is discrepancy between available stock and records. Nevertheless, I like him because he instructs how to do better; he is not like some other supervisors from the district who just pass here quickly without time to know where we are stuck.* (NA, dispensary 1)

On several occasions, we observed discrepancies between the records of IPTi and corresponding immunisations on RCH cards and mothers' responses. Some mothers reported in interviews and FGDs that their children had not received IPTi although it was marked on their cards, while others recalled that their children had received IPTi although it was not marked on their card. Other mothers, with IPTi either marked or unmarked on the RCH card, said they had forgotten or they did not concentrate on observing the records because health workers knew what was the right thing to do. The project mid-

term IPTi household survey and documentary reports [65] from health facilities matched with LAS and IES data in revealing some discrepancies between the records of IPTi and children who had received IPTi and corresponding EPI doses.

8.5.3 Drug prescription behaviour

There were some indications that the training had not influenced drug prescription behaviour among some providers, especially clinicians. According to the HO at one district hospital, paediatric clinicians did not check on RCH cards before prescribing drugs to children. As a result, the HO said some clinicians had prescribed antimalarials to children on the same day that they had received IPTi from the RCH clinic. The HO recommended more training for clinical officers, focusing on the importance of checking the RCH cards before prescribing drugs.

> *If there is going to be another training opportunity, it is important to involve all paediatric clinical officers; otherwise, they will overdose children with antimalarials as has happened several times here. No one else from RCH clinic can convince them; those who call themselves doctors do not expect to learn anything through someone like a nurse or me.* (HO at a district hospital)

8.5 4 Use of posters and health worker guidelines

There was contradictory behaviour among service providers in facilitating information flow. One of the service provider trainers was optimistic that service providers had been using the posters as training materials, based on the agreement between the trainers and service providers at the training. However, the results from FGDs, individual interviews and participant observations throughout LAS and IES show that providers seldom used the posters displayed at clinics as a teaching aid. Some of them said that the posters were for clients to read themselves, although others argued that the posters were useful for both clients and them.

Throughout IES and LAS, only one among eight WTs reported that a nurse had used posters as a teaching aid during health education at the local dispensary. Likewise, a DHB chairperson, a graduate from university, admitted to have been at TH hospital but without noticing the IPTi posters. Moreover, none of ten leaders of the women's wing of an influential political party who participated in a FGD had either seen the poster or heard of IPTi at all. Conversely, most mothers seldom noticed the IPTi posters at the RCH clinic-waiting venue or in the vaccination rooms (Figure 8: Clients may not notice the posters at health facilities). The following quotes highlight the differences in assumptions and reality on the use of posters.

> *Surely, health workers used the posters as we instructed in the training. I think you also saw the posters. I witnessed on the launching days at seven facilities as service providers used the posters to educate the audiences about IPTi. I think they continued doing so in their daily health education sessions.* (IPTi Trainer)

> *That poster is for mothers and we (service providers). Sometimes I memorise myself especially when I have forgotten the definition as it is [However, some boxes were obstructing the definition at the time of this conversation].* (HO, at district hospital)

> *This room is the right place, because all these [pointing at young babies held by their mothers] must enter in that room. It is up to mothers to read or not. Mothers can ask either their fellows or health workers for clarification if they do not understand.* (DHB chairperson, at district hospital)

> *We decided to place these two Mkinge posters in this room because it is where we provide child services. These posters are for mothers to read themselves so that they know the importance of Mkinge.* (PHN at dispensary)

> *I am just facing there [towards the wall with posters] but my mind is too far from that poster which I cannot read. I wish my child had received services already; I have other matters to sort out today.* (Mother at clinic)

There were some challenges regarding the sustainability and use of posters at some health facilities. For example, within a month of the launch of IPTi, a researcher could not find the posters at the first intervention facility. Informants reported that someone had taken the posters to decorate his house, because they appeared attractive. Similarly, from observations in the second and third years of IPTi implementation, some posters were either missing or destroyed while others were obscured at various intervention facilities.

At one district hospital RCH clinic, the PHN reported that a mentally retarded patient had destroyed the poster. However, another nurse said, "*We received two posters for Mkinge and placed them at different places. I do not know what happened to the one that we placed here [at RCH waiting venue]. I guess either the wind blew it off or some people came to remove it.*"

During participant observation, I saw a poster on the wall of a district hospital clinic, but boxes of syringes on an adjacent table were obstructing more than half of it including the photograph and captions. The HO complained that unknown irresponsible staff had obstructed the poster. Several mothers had earlier reported in the FGDs at clinic that there was no IPTi poster at the hospital. I was not able to establish the duration of obstruction, but it is possible that it had been a long period.

Figure 8: Clients may not notice the posters at health facilities

During the first year of implementation, many FGD participants in some intervention areas talked about (Mkinge) IPTi in ways that suggested that they lacked knowledge about it, knowledge they could have obtained from the posters. Some mothers thought

that their children were getting panadol (paracetamol) for cooling down fever due to vaccinations. In FGDs, some participants explained Mkinge as follows:

> *P2: Mkinge means self-protection, for example, taking drugs at the onset of illness.* (FGD with mothers)

> *P7: Yes, I heard about that Mkinge at the dispensary. Protect child against malaria, by providing a mosquito net, especially when a child sleeps early in the morning or any other time. I also heard about protecting a child against other infectious diseases [magonjwa ya kuambukuiza].* (FGD with mothers)

> *P5: When they say Mkinge, they mean keeping a child in required places, clean and sleeping under a mosquito net.* (FGD with mothers)

Moreover, many clients left clinics with unanswered questions that they had wished to ask but lacked courage to do so. Some of these questions came up in FGDs, as follows:

1. *How long does MKINGE stay in a child's body?* (Mother in FGD)
2. *Why does our midwife tell us that Mkinge is panadol?*
3. *What is a schedule for a child to get an injection or Mkinge?* (Mother in FGD)
4. *How can we get birth certificates for our babies?* (Mother in FGD)
5. *We would like to know more about Mkinge and corresponding vaccinations* (Mother in FGD)
6. *What does SP contain?* (Mother in FGD)
7. *What is the meaning of Tetanus injection?* (Mother in FGD)
8. *I only wanted to ask about the meaning of Mkinge. I did not dare ask because instead of learning we [RCH clinic clients] laugh when our fellows ask questions.* (Mother interviewed at home).
9. *How many days should a child stay without taking other medicines after receiving Mkinge; and which steps should be taken in case a child gets fever at home following the use of that Mkinge?* (WT)
10. *Are there different types of Mkinge?* (WT)
11. *Did our providers bring false posters, which should have gone where they use SP?* (WT)

However, awareness about posters and IPTi in general did increase gradually among respondents in subsequent individual interviews and FGDs. Nevertheless, some respondents were not satisfied that the posters were displayed at health facilities only.

> *Since IPTi is new, there is a need to display posters at the market where everyone goes. Hospital is a good place but we normally go there once in a month.* (Mother's FGD-village 8)

As regards the job aid, no service provider said that they were using such materials. From observation and interviews with health care providers at two facilities, reference to the job

aid at the time of administering IPTi was uncommon. Both the HO and PHN at a district clinic claimed that they had understood everything in the training. However, observations at RCH clinics and interviews with mothers revealed that health care providers seldom asked questions or counselled mothers during IPTi administration as per training and job aid instructions.

8.5.5 Flow of information about IPTi outside the intervention areas

Data from individual interviews, FGDs and observations concur that mothers sought vaccinations at RCH clinics in both intervention and non-intervention areas. Therefore, some children from outside the intervention areas received IPTi at RCH clinics in the intervention areas. Moreover, some children from intervention areas had missed IPTi because they received corresponding vaccinations at non-intervention facilities. Seeking vaccination at either intervention or non-intervention area was not associated with news concerning IPTi. Reasons included visiting relatives or spouses, and changing residence due to temporary separation in marriage or divorce. Mothers generally believed that services were similar, except on the side of provider competence, absenteeism and their relationship with clients. Findings from LAS suggested that information about IPTi had not spread beyond intervention areas despite this movement. However, some workers thought that IPTi was under implementation everywhere in Lindi and Mtwara regions while it was only implemented in 12 out of 24 wards in the five districts.

8.6 Flow of information about other malaria interventions

8.6.1 Information about IPTp

Health workers featured as a leading source of information about IPTp in the conversations about IPTp with mothers. Moreover, there had been discussions about IPTp among mothers in the community too. Many respondents in FGDs and interviews recalled

having received IPTp. The majority talked of IPTp as three white tablets while others explicitly mentioned three SP tablets.

The majority of mothers expressed positive attitudes towards IPTp and reported having taken it either as DOT at the health facility or at home. Throughout acceptability and IES studies, mothers repeatedly said that IPTp was for protecting mothers and their unborn babies against malaria. There was disagreement among respondents over preferences between direct observed use at a health facility and use at home. Some ANC clients expressed a fear of contamination due to sharing a cup at clinic and fear of drowsiness on the way home if they received IPTp at a health facility. Hence, some respondents had heard from other mothers who boasted that they fooled midwives at the time of IPTp administration that they had not eaten breakfast and some of them deliberately avoided bringing water with them. Nevertheless, more respondents highlighted the importance of direct supervision for IPTp, based on what they had heard from their fellows.

As reported by several mothers in FGDs and interviews, I observed some providers give IPTp to mothers and urge them to take it at home instead of through direct observation at clinic. Some providers reported that they had given IPTp for use at home due a shortage of clean water at the health facility. Some mothers believed that their providers knew some of them might throw the IPTp away because they used to warn them against such behaviour. All three data collection strategies revealed uncertainty around the use of IPTp at home, partly due to rumours surrounding IPTp. The FGD participants and those interviewed individually expressed concerns, though infrequently, that IPTp might lead to miscarriages or delivering big babies by either caesarean section or episiotomy. There was a widely accepted belief that caesarean section and episiotomy were painful, life-threatening experiences. There were also concerns that IPTp might lead to prolonged

body malaise *[mwili kuchoka]*. Relatives, parents and peers or spouses therefore likely influenced the use of SP for IPTp at home due to perceived fears.

> *If we bring those tablets [SP for IPTp] at home, our mothers and grandmothers will warn us that we may face complications at the time of delivering.* (FGD with mothers, village **2**)

> *We do not understand these SP tablets, which we take while pregnant; they harm some people, and help others.* (FGD, Mothers in village **2**)

8.4 2 Information on subsidised nets, integrated child health campaigns with free mosquito nets

The discount vouchers themselves, pocket calendars, process of signing, local slogans, motivated service providers, shopkeepers, and radio as well as video shows contributed to a rapid flow of information about discount vouchers for mosquito nets.

During LAS and IES, various respondents talked about distribution of insecticide-treated mosquito nets (ITNs), discounted nets and campaign-based distribution of free ITNs. Information about discount vouchers reached the study areas through mass media, health workers, shopkeepers and community leaders. In addition to health providers as their main source of information about discounted ITNs, mothers also mentioned printed materials such as pocket calendars and popular local cloth wraps, known in Swahili as Khanga. In one village [KM], mothers reported in the FGDs that their midwife had issued pieces of paper after she informed them at clinic about plans to introduce discounted ITNs. Later, the acceptability team researchers confirmed that mothers had received pocket calendars with the words *"hati punguzo"* that mothers kept carefully, believing they were real vouchers. Furthermore, there was a joke in some areas where men nicknamed pregnant women as the *"hati punguzo"*. Thus it was common to hear men using sayings such as *"wewe hati punguzo"*, i.e. you pregnant woman, or *"yule hati punguzo"*, i.e. that pregnant woman. Asked how women perceived such slogans, a WT at village **1** said those were just normal words from men. Nevertheless, the WT said the

slogan was not offending. I also observed, as acknowledged by mothers, that some providers gave out pocket calendars and leaflets to mothers as incentives for either asking or answering questions during health education.

Some health workers praised the approach used to introduce discount vouchers because all RCH staff attended training at different intervals. Some providers also appreciated the provision of lunch and the Khanga for themselves and for giving to their colleagues. A VHW at one of the dispensaries commented that the pairs of Khanga were memorable presents and made them feel that the discount voucher scheme valued their services. The VHW appreciated that her senior, the NA from the same dispensary, brought her a present of a Khanga from a seminar the NA attended. Health workers also participated in the evaluation of discount vouchers in the villages together with a team from MEDA international, whose presence stimulated more discussion about ITNs.

On various occasions, the HO at a district hospital clinic issued the vouchers while emphasising to mothers that a voucher was substitute money given by the government in order to protect mothers and unborn babies. Furthermore, before receiving vouchers, mothers had to sign in the issue book by writing or fingerprint. I observed mothers smiling and talking slowly among each other after signing, but I did not manage to ask how they felt about signing.

The DHB members in TH district also appreciated their involvement in sensitising the community about discount vouchers. Discount vouchers became a priority task for DHB, after research results in the district indicated a very low use of vouchers despite mass communication and efforts made by health providers.

News about free untreated bednets bundled with insecticide spread rapidly in study areas after announcements from national level. In addition to radio broadcasting, a series of preliminary activities took place at district, ward and village levels. The CHMTs organised one-day seminars for health workers, village leaders and teachers on how to facilitate the campaign. Mothers reported in FGDs that village leaders had announced the integrated campaign that would involve bednets bundled with insecticide and other services. At village level, sub-village leaders conducted a census to register all under-fives. However, some respondents said that a few villagers doubted the registration exercise to the extent of not registering their children. Despite announcements that registration would help in estimating the supplies for the campaign, some villagers decided to flee to their farm houses, due to fear of a hidden agenda in the exercise.

The acceptability research team witnessed CHMT representatives deploy a large number of supplies before the campaigns. On the evening before the campaign, a team of acceptability researchers heard a village crier [Mpiga mbiu] inviting all parents to bring their children to assigned posts for vaccination and free mosquito nets. During the campaign, these researchers coincidentally came across CHMT members at different campaign posts, educating the community about the campaign packages, including measles vaccination, tablets for de-worming and free mosquito nets bundled with insecticides. When asked, both male and female respondents recalled the messages from guest speakers.

Overall, most respondents talked positively about the campaign during follow-up interviews two months later. Surprisingly, even shopkeepers in acceptability sites talked positively about the free mosquito nets because their children and relatives had benefited. In various places, there were discussions that both subsidised and free mosquito nets had reduced malaria. In a semi-urban village, there was speculation that one of the presidential candidates brought free mosquito nets and other things such as *Khanga*

[women clothes] in order to capture the attention of women who had to endure the burden of caring for children sick with malaria. In addition, some respondents in different areas said that there had been complaints about some five-year-old children not receiving free nets while others of a similar age received them. One village chairperson had threatened to resign after frequent accusations that he favoured some children who were not eligible. In other areas, some villagers had vowed not to participate in public activities while others appreciated the campaign. However, among those who missed the nets were children whose parents were not available to register them before the campaign.

> *There is no need to provide free labour in village development activities while our children do not get equal treatment. Some children missed received mebendazole tablets only compared to others of the same age who received free nets as well. Our leaders favoured their own relatives.* (female FGDs at villages **6** and **9**)

> *One parent threatened to kill someone by panga (machete) unless his child, who was over 5 years, got a free mosquito net, because he knew another child of the same age who received a net.* (Health provider at health centre **6**)

> *If our children get malaria, it will be because through negligence as they did not get nets.* (WT-MM)

8.6.3 Local knowledge and experience of Alu

News about Alu spread slowly before its introduction at health facilities. A few WT from distinct areas of the coast and the border with Mozambique reported that they had heard on the radio about plans to introduce Alu.

> *They have been announcing on the radio that there will be new antimalarial drugs from next June 2006.* (WT, village **1**)

During implementation of Alu, participants at community and health facilities reported mixed perceptions based on their experiences of taking Alu and rumours spread by local residents and villagers about the drug. Several children had received only partial doses because of information that spread in the community about Alu and other antimalarials.

In the beginning of implementation, a few respondents knew the Swahili expression of *dawa mseto ya malaria*, i.e. malaria combination therapy. Those who had either used Alu

personally or received it for their children described the drug as yellow coloured tablets, different in amount according to age, blistered and packed in boxes. Some respondents at home recalled a picture of a mosquito (which one mother said was a picture of malaria) on the sachets holding Alu tablets.

A CO at dispensary 1 believed that the community was happy with Alu because none of the clients had gone back to complain after taking the drugs. A few respondents who had used Alu, including a dispensary committee chairperson, reported that unlike other SP and Amodiaquine, Alu did not interrupt one's appetite; it had no hangover and cured fast. However, there were some concerns about Alu among various people in the study areas. A DHB, with a background in pharmaceuticals, suspected that some people had forced the introduction of Alu against an effective SP, without sufficient evidence, with personal interests in mind. A VHW at dispensary 1 reported in a group interview the rumours surrounding Alu and news about a large nation's drug trial that used rural people as guinea pigs.

> *I heard a group of men in my village discussing the news which they heard through radio that the experts from a big nation want to see how many of us will die and how many will survive after using that drug [Alu].* (VHW, dispensary 1)

> *Recently, we heard from the radio that the same big nation has invented mosquito species that is going to spread malaria alarmingly so that we die fast.* (VHW, dispensary 1)

In a group interview at one WT's house in dispensary 1, a female guest from a village near the urban area said that some people in town had nicknamed Alu as *"a big wooden stick" [kigongo],* because it caused strong fatigue. Others called Alu *"Twenty four" [Ishirini na Nne],* i.e. 24 tablets.[12] In this group interview and conversations with other respondents in village 1, rumours dominated that Alu was too fatiguing and had caused some villagers to be admitted to hospital due to adverse effects. However, when followed

[12] A full dose of Alu for adults includes a total number of 24 tablets blistered on one sachet.

up, two named residents of dispensary 1 confirmed that they had been admitted after they had used two brands of SP tablets within 12 hours.

Several mothers declared that that they had administered partial doses of IPTi to their children. These children did not complete six tablets as prescribed at health facilities. Some respondents, in dispensary 1 and TH, admitted that they improvised the administering of Alu to their children, based on the fear that the prescribed dose of two tablets twice for three days was too much for children under one year. The WT in dispensary 1 showed four out of six remaining tablets, after she decided to terminate administering Alu to her eight-month-old child. The same WT was ready to take the researchers to houses of mothers she had heard talking about giving partial doses of Alu to their children.

> *"Those six tablets (Alu?) are too many for a young child. After I gave two tablets, I hesitated and suspected that our clinician at the dispensary had forgotten that children normally take half tablets for treating fever. Therefore I decided to stop because after those two fevers my child had no fever anymore."* (WT)

> *We have raised other children by giving them half tablets, even that SP for IPTi is half. For us mothers, we suspect that our clinician and midwife have not inquired properly. We give half tablet Alu to these little ones and not full tablets and keep an eye on them because we have seen what it does to adults.* (WT, dispensary 1)

> *I have also heard others saying, "I stopped after using only one row because those tablets [Alu] are just too many.* (WT dispensary 1

Generally, there was no such discussion about either continuation of IPTi with SP or Alu in study areas, except when researchers raised the issue hypothetically. Most respondents, including health workers, community leaders and community members in FGDs, and individual respondents, preferred continuation of IPTi with SP rather than Alu, because they had not heard about adverse effects of the current strategy in their areas. Others were concerned about adherence to many Alu tablets for a single dose. A few respondents who wanted Alu for IPTi based their reasons on the need to test a new drug that, so far, had no side effects from their point of view.

8.7 Local politics, gender relations and flow of health information

As shown in the previous results chapters, there was mistrust among service providers and community leaders in some villages. Because of this mistrust, VHWs were used as informers by both sides. For example, VHWs leaked the news about a salaried NA who charged unofficial charges on Depo-provera (family planning service), RCH cards and other services. Surprisingly, FGD participants and individual respondents never raised concerns about unofficial fees for RCH cards throughout the LAS study until such information was apparent during the ethnographic phase.

The news about unofficial charges for Depo-provera spread rapidly, unlike that around RCH cards and discount vouchers. Family planning services were sensitive issues involving both male and female partners so the unofficial charges affected both. The councillor condemned the practice in a public meeting attended by an MP, claiming that men had complained to him after their wives demanded money to pay for unofficial charges on supposedly free family planning services. The councillor talked of the rumours that the NA had injected "water" instead of Depo-provera injection.

The NA heard about the accusations through villagers who attended the meeting. Some informants reported that the NA took revenge by talking harshly against mothers, the councillor and some VHWs. There were reports that she decided to inject Depo-provera only to her friends and those who paid unofficially, while denying it to other women, whom she told, *"go and ask it (Depo-provera injection) from your councillor whom you applauded when he said that I have been giving you water injection."*

A general observation from the study areas was that men shared useful information with their wives and took actions based on the perceived importance of the information. As

seen in the case of Depo-Provera, they complained to the councillor. Many female respondents who applied for the post of WT reported that their husbands had seen the advertisement and encouraged them to apply. Moreover, throughout LAS and the ethnography phase, most WT acknowledged that they had been receiving some child health information through their husbands. Fathers also demonstrated awareness and took children to clinics during distribution of free mosquito nets and in the discount voucher scheme. The male shopkeepers and discount voucher agents associated discount vouchers with getting more income but also perceived free nets as cost saving. With the expectation that mosquito nets would reduce malaria, a male shopkeeper said that he might not be obliged to support his relatives financially as used to happen when they had malaria. Nevertheless, fathers were less aware of IPTi compared to mothers. Some had wondered why children should take antimalarials (SP for IPTi) while they were not ill, and threatened to stop them. The following extract suggests a possible explanation:

> *According to our distribution of responsibilities in our area, very few of us (fathers) can tell you about that IPTi and posters you are asking us. The posters are hidden in the room for mother and child health services men seldom enter.* (Male FGD village 4)

Table 7a: Information flow for IPTi compared to parallel preventive child health interventions (a)

ITNs	Communication channels	Specific Items	Emerging discussions	Time	Rapidity
Discounted ITNs *[Hati Punguzo in Swahili language]* for pregnant women and under fives	Radio[13], health workers, local shopkeepers, public meetings e.g. ,malaria day, video shows in the villages, seminars for RCH clinic staff, posters at health facilities and shops	Take away [from health facilities] pocket calendars and discount vouchers, Khanga[14] (distributed to some RCH staff during training and mothers) and mosquito nets bundled with insecticide sold at shops. Posters, cash[15]	Mixed opinions on affordability [Mothers recalled exact prices unofficial charges,[16] as told by health workers. RCH staff valued material items from seminars[17] RCH staff urged mothers to value a voucher as money, Jokes in the community, pregnant women called *"hati punguzo"*	Started a bit earlier than IPTi	++++
Free ITNs and measles vaccination	Mass campaign involving radio, village criers, village leaders, local schoolteachers, pre-campaign child registration in the households, RCH staff announced at clinics, clinics.	Mosquito nets bundled with insecticide at various posts within sub villages, measles vaccination and mebendazole tablets	Rumours, e.g., children had died after their mothers took them to various vaccination posts in order to get more mosquito nets. Accusations in the villages, health workers suspected of smuggling some ITNs, some parents decided to cheat by backdating the ages of their children; some people took nets, but threw away the insecticide, some parents ineligible children threaten not to participate in ongoing and future communal works.[18] Children from nearby non-campaign areas crossed the borders. Generally applauded by villagers and local ITNs' retailers applauded free nets as a sign of Government's love to children News spread rapidly	Happened in the course of IPTi implementation	+++++

[13] Mothers in different sites recalled exact chorus and messages about *"Hati Punguzo"*
[14] Khanga, are popular and respected pieces of clothes for women
[15] Monetary transactions that involved fathers and mothers, as well as health workers and shopkeepers
[16] Unofficial fees revealed during ethnography. Not often talked about in other sessions
[17] *"We likes the way HP was introduced, because we get khanga and a good seating allowance"*
[18] E.g., In KH, some villagers said they would no longer participate in construction of their dispensary

Table 7b: Information flow for IPTi compared to parallel preventive child health interventions (Cont)

ITNs	Communication channels	Specific Items	*Emerging discussions*	Time	Rapidity
Alu	Radio, visitors from urban areas, service providers attended training,	Blistered Alu tablets, in varying package according to age and weight of users through health facilities.	*I heard in the radio that new antimalarials are coming in June 2006``. (MT-Chikonji Nangaru), compromised adherence*[19] Though unaware of the brand name, mothers recognised yellow colour, blistered tablets, with images of either young child taking ALU. "An image of mosquito on the blister interpreted as a picture of malaria" [Mother in village 2] Mixed opinion about ALU as a too strong drug. Rumours: A female VHW quoted quote men who claimed to have heard from radio that ALU was *a big nation's plot to eliminate the population*[20]*. The same men said that a certain nation recently invented a mosquito specie for spreading malaria alarmingly*	Introduced in the course of IPTi implementation	+ +
IPTi	Researchers, seminars for RCH clinic staff, posters at health facilities and shops, service providers talked while administering IPTi	SP tablets [under direct supervision by RCH staff and in rare cases given as take away]	Sometimes RCH staff explained, IPTi rarely discussed beyond health facilities, some fathers wondered why healthy children should receive SP, while were not sick. The majority, when prompted said IPTi had reduced episodes of child illness. Initially, most mothers, said IPTi was a panadol;[21] there were no rumours, metaphors or any other linguistic expression. Enumerators from same areas & researchers spread more information about IPTi		+ + +

[19] Compromised adherence on Alu
[20] Interventions perceive as a plot to eliminate the population
[21] Antipyretic drug

8.8 Flow f information for traditional practices

Initially, respondents, especially women, were hesitant to talk about traditional interventions for young children, but as they got used to researchers, women talked openly about protections in connection to sexuality, taboos, and other traditional preventive practices. These included the use of traditional herbs and other spiritual forms of prevention and treatment for young children and pregnant women.

There was widespread talk about a ghost termed locally as Nandenga, which in addition to other harmful effects, used to circumcise young children mysteriously. Several respondents in all eight acceptability sites said they knew children who had succumbed not only to infections after circumcision, but also convulsions, paralysis and death due to Nandenga. In all areas, most also agreed that unborn and young children were at risk of attack by harmful supernatural spirits termed locally as *"mizuka or mnyama or majini"*, i.e. an animal. There was a common belief in all study areas that *mizuka or myama* liked to attack mothers and possess them to the extent of protecting them either from having babies or male partners. Conversations about harmful spirits and malicious action through witchcraft led respondents to justify traditional preventive practices for young children, most visibly through special black strings on the arms, neck or waist. Such practices were common among health workers and community members.

> *Witches can attack anyone that is why we have to use our customary protections [kinga za kiutamaduni] in order to protect our chi9ldren and grandchildren.* (An elderly PHN in village **2**)

Generally, local respondents easily talked about bad spirits termed locally as *nandenga, mashetani, majini or mizuka.* Similarly, they would easily mention *Kinga*, referring to protection. However, explaining the types and contents of *Kinga* was not as straightforward as mentioning the perceived risks and general concepts of protection, unless they were prompted.

8.9 Discussion

This chapter has described how information about IPTi and parallel child health interventions spread among the communities of rural southern Tanzania. The chapter also highlights the role of stakeholders from national, regional and district levels, health facilities and local communities in shaping the awareness and behaviours surrounding delivery and uptake of preventive interventions and relevant parallel services. Initially, in different capacities these stakeholders played important roles in facilitating the development of BCC strategy for IPTi implementation with materials such as guidelines, record books (MTUHA) and child health cards. In what could be called a participatory approach, these stakeholders were also involved in the subsequent implementation and evaluation of a public health strategy for IPTi [65, 69, 188]. Participatory approaches can play vital roles in the success of various community development activities including health interventions [65, 69, 188]. To some extent, CHMT members, health service providers and local communities in this study received and shaped information that influenced their roles in the community and health facilities, thus affecting provision and utilisation of health services. It was evident that friendly interactions facilitated information sharing among mothers and service providers at health facilities and in the community. Good provider-client relationships can improve satisfaction with services provided by health providers and therefore encourage utilisation [197].

However, the findings have also exposed how unfriendly social relations hampered a sustained flow of information among the CHMT members, service providers, community leaders and wider communities. For instance, not only did one DMO exclude the RCH coordinator from attending a crucial feedback meeting, but also neither DMO nor any of the delegates gave feedback to other CHMT members and service providers. The mid-evaluation results communicated to stakeholders in the meeting suggested that there were missed opportunities in uptake of IPTi. The delegates from all CHMTs agreed to give feedback to health facility staff as part of strategies to improve the noted discrepancies.

According to national policy guidelines, the district RCH coordinator is responsible for delivery of supplies to each facility, checking stock, reviewing record-keeping and supporting front-line health workers [69]. Therefore, a lack of feedback to the RCH coordinator and other service providers had several implications including lack of information for improving supportive supervision and delivery of services.

Similarly, the findings have highlighted how unfriendly relations between salaried service providers, VHWs and community leaders negatively affected the exchange of information, adding to constraints in provision and utilisation of services at some health facilities. As detailed later in this section, rumours about the NA charging unofficial charges turned into power relations between a councillor and the NA, and had negative consequences for women who could no longer receive Depo-provera.

This chapter has also revealed discrepancies between information recorded on RCH cards, MTUHA books and the testimonies of mothers and service providers. Arguably, the service providers were overburdened, unqualified and poorly motivated in delivering all services, as detailed in chapter five. The presence of researchers, close supportive supervision and feedback sessions influenced providers to improve performance in many aspects, including the flow of information.

Furthermore, service providers changed their communication style during health education and record keeping after they realised that they were actively being followed-up in the community and health facilities. The findings show that the health education sessions at clinics were declining; mothers viewed them as badly timed and generally unattractive. Hence, they tried to avoid the sessions or did not pay attention during them. However, being motivated to impress the researchers and as an outcome of close support and supervisory visits by the project implementer, some service providers changed their behaviour in conducting health education, as in record keeping. The results show that

some clients could hardly recall the messages shortly after a service provider conducted unusual health education sessions with different uncoordinated messages. Others, however, recalled some of the messages and appreciated the friendly behaviour accompanied with unusual rewards such as cash or praise to clients who answered questions. A friendly provider-client communication process and friendly content can influence the extent to which information provided is retained and, in turn, serve as a cause of subsequent patient behaviour [215]. Such findings suggest that service providers need refresher courses on conducting health education to adult clients at health facilities. People learn best when their own motivation is supported, their active participation is encouraged, their experience is valued and the content is relevant to their daily work [216]. There is also a need for the health system to consider extending follow-up visits beyond health facilities by actively seeking feedback from the community. So far, the tradition has been for CHMT members to conduct follow-up supervisory visits at health facilities where they collect information from reports compiled by service providers. Likewise, the regional and zonal officers have been visiting some facilities randomly. The community component in evaluation of health care in general has been missing, according to a senior zone officer.

The findings have also shown how some service providers avoided using tools such as a job aid, posters and implementation guidelines provided by the IPTi project and other interventions. These tools could facilitate two-sided communication between service providers and mothers or caretakers before and after administering IPTi and other services. One of the key trainers and implementers thought that the service providers frequently used the materials that they received from training and more supplies during subsequent visits. The RES and BCC development and piloting results had also shown that service providers and clients would read and apply these materials. However, the providers from most of eight facilities in the LAS areas hardly used the posters and job

aid, according to observations and accounts from mothers. Contrary to initial impressions from RQS that literate mothers would read the posters themselves and read them to those who were unable to [67], there was no evidence to suggest that mothers read or noticed the BCC materials, except when researchers influenced them to do so. Instead, verbal communication remained the most important means of communication among service providers and clients. Posters remained an unpopular source of information during implementation, as they were before in the study areas [67] Nevertheless, mothers were able to follow health education on a rare occasion when service providers used an RCH card as a teaching aid.

We triangulated these results in another study [168] by adding a module on information flow in a large household survey conducted in five districts during 2006. The survey results gave an impressive picture but there were also gaps regarding the use of job aids among service providers, as mothers and caretakers responded below:

- "Did the health worker explain what MKINGE was for?"
  - 42% (107/252) said yes
- "Were you asked whether the child had any malaria treatment in the previous 2 weeks?"
  - 47% (119/252) said yes
- "Were you asked if the child had ever had an adverse reaction to any medication?"
  - 26% (66/258) said yes
- "Was the tablet given at the clinic, or were you given it to administer at home?"
  - 6% (15/252) at home

These triangulated findings illustrate the need to review the existing guidelines for health communications at health facilities. Arguably, the posters displayed at health facilities and the job aids are less relevant if service providers are not motivated to use these as teaching aids.

Overall, the rapidity of flow of information about the study interventions depended on the communication channel, content, process and actors involved, as well as the history behind such interventions. There was a gradual spread of information about IPTi within and beyond the intervention areas [28]. This was different from the subsidised and integrated campaigns for measles vaccination and distribution of free mosquito nets. Like these parallel interventions, IPTi relied on service providers as the main channel of information in line with the standard health education style that existed before IPTi implementation. However, the parallel interventions involved additional channels of communication such as radio, video shows, village criers and shopkeepers. Most people in Tanzania have a long-term exposure to health education, even before the government launched *"Mtu ni Afya"* [Man is Health] campaign that improved health outcomes through weekly radio broadcasts [176, 180, 184, 185, 217]. Similarly, radio and drama groups have facilitated rapid behaviour change among service providers and community members as reported from Malawi, Uganda and elsewhere in Africa [100, 171].
However, very few households owned a radio in all five districts [65], and the WT and mothers rarely listened to the radio throughout LAS and IES, so other reasons may explain why news about parallel interventions spread faster compared to IPTi in these areas.

There had been well-established information about subsidised ITNs in many parts of Tanzania, including in our study areas, before and after distribution of free ITNs under CSPD funded by UNICEF, followed by the introduction of socially marketed ITNs by Population Services International (PSI) [77]. In addition to health workers and mass media, there was community involvement through the local shop owners/shopkeepers. The local discount voucher agents acknowledged their motivation to sensitise both male and female parents at their households to buy subsidised nets because the business was

profitable. Community involvement in preparation and execution of campaigns that included distribution of free ITNs also created awareness locally. In these campaigns, community leaders, teachers, VHWs and village criers registered children, attended trainings, sensitised communities, administered the interventions and compiled reports.

In terms of content, there was direct monetary value attached to subsidised and free ITNs. The ITNs were tangible products that could last a long time. Moreover, pocket calendars issued at clinics prior to delivery of the discount vouchers for nets stimulated discussions in the community. Some villagers thought that the calendar was a voucher itself. As the findings show, some service providers described the vouchers as money sent to mothers by the government. Moreover, the vouchers involved unofficial and official money transactions, involving service providers, mothers, fathers and shopkeepers.

The study findings also show how local villagers changed the intended mosquito insecticides into pesticides for the production of vegetables and sunflowers for food and income generation, as well as for spraying the bedbugs and other insects in the households. Viewed from an etic point of view, one might be interpret such changes as misuse, while from an emic perspective; this was a diverted use of new technology to meet the most important perceived local priorities. The cooperative unions in the study areas were no longer supplying free pesticides as they used to. The freely distributed mosquito nets somehow reminded people of their previous experiences, when the peasants diverted some of the pesticides for cash crops into food production in the study areas. Although long lasting treated nets (LLNs) are likely to bridge the gap between net treatment and re-treatment [109], further instigations on the use are necessary since people sometimes doubt new technologies and this can lead to slow uptake [89, 100].

Local terminologies, slogans and rumours also possibly shaped the pace at which information about child health interventions spread in the study areas. Interestingly, there was a common slogan used to name pregnant women as *"Hati punguzo"*, i.e. a discount voucher, which was socially acceptable and contributed to making *"hati punguzo"* part of daily talk among the study communities. In contrast, there were inconsistent terminologies for IPTi such as *SP za watoto*, Mkinge, *panadol and shonadol* (antipyretics) which probably contributed to low awareness about Mkinge.

Thus, socially acceptable slogans and jokes, radio promotions and video shows, the pocket calendars, vouchers mosquito nets themselves, a long culture of mosquito nets, and motivated shopkeepers and service providers, all facilitated a rapid flow of information about discount vouchers. Units of adoption, specific items, time and channels of communication, as propounded by the theory of diffusion of innovations [172], were clear enabling factors for the fast spread of information about subsidised nets compared to other preventive interventions addressed in this chapter.

With regard to Alu, while some respondents could recall the colour and amount as well as a picture of a mosquito on the sachets holding Alu, previous experiences of the packaging and doses of antimalarial tablets stimulated local interpretations about recommended doses of Alu. Several respondents doubted why children should repeatedly take full tablets when they used to administer half tablets for antimalarials, e.g. (SP) and antipyretics e.g. (Paracetamol). It was therefore evident that often only partial doses of Alu were taken, especially in children.

The findings also show how the local communities and service providers spread rumours about Alu, as well as campaign-based measles vaccinations. It is worth noting that the rumours about campaign-based measles vaccinations were intended to discourage parents

who wished to take their children to different posts in order to get more free mosquito nets. Conversely, the rumours about Alu coincided with those surrounding news about the invention of genetically modified mosquitoes. This latter news featured in the local radio and newspapers that acknowledged the BBC as a source [67]. Rumours had spread in one village that both Alu and genetically modified mosquitoes were a plot by a big nation to eliminate the local population. There had also been similar rumours from the same communities, but about drugs used in trachoma and filariasis campaigns [67]. Such findings deserve attention and appropriate action; otherwise, rumours can lead to poor uptake of genuine public health interventions. They are known to have constrained the uptake of tetanus immunisation in Cameroon, food support in Zimbabwe and affected research projects in Mozambique [89, 100, 171, 204, 205].

The analysis of how the local communities communicate about traditional practices, such as initiation ceremonies and protections against perceived health risks, can help to explain the norms governing how people should interact with strangers. Respondents, especially young women, were often reserved when talking to us in the initial stages of research but became open over time. We also heard from other researchers who reported having less amiable female respondents than anticipated. The indigenous culture of *"unyago and jando"* in the area prepares women to interact carefully, guardedly, with strangers. However, a long-term engagement with these communities can allow more openness and information, as was found during this study [190].

The flow of information about interventions addressed in this chapter can be situated in different theoretical perspectives. From one view, there was a syncretism of information about both traditional and biomedical preventive child health interventions addressed in this study. Local communities perceived information about IPTi, EPI, ITNs and other biomedical preventive services as complementary measures to protect pregnant women and children. From traditional views, the same groups were most susceptible to risks

caused by evil spirits and acts of malicious people, which therefore deserved traditional protections. As explained with examples from Tanzania and Uganda, a medical syncretism perspective asserts that biomedical knowledge about health interventions, rather than displacing pre-existing concepts, has sometimes merged with them in shaping the interpretation of messages about health and illness and care seeking behaviour [176, 202].

Power and gender relations, information flow and service utilisation

The communication process can help in promoting a good relationship between providers and clients [215]. However, power relations can hinder a good provider-client relationship, affecting service utilisation. The results presented also depict how power relations and gender roles played a part in shaping communication among service providers, local leaders and the community in general. Public accusations amongst clients, leaders and service providers hampered the delivery of preventive health interventions. A local leader who publicly accused the NA of corruption and injecting women with water instead of Depo-provera impressed men, albeit he disappointed the NA. Consequently, the NA demonstrated power against mothers, through harsh language and denial of preventive services. As the NA claimed that the councillor was inferior because of his lack of knowledge on health matters, the councillor thought that he had the power to discipline the NA by liaising with the top district authorities.

None of the adopted BCC materials for IPTi included men [67]. Likewise, men were not involved in any of the BCC materials for the other parallel interventions addressed. However, men brought their children to routine RCH services at health facilities and in the outreach clinics as well as during campaigns. Because of a lack of information, some men questioned why healthy children should take SP, a tablet known for malaria treatment, and these men threatened to discourage their wives from giving their children IPTi [89]. A lack of clear information among men resulted from a BCC strategy that

underestimated gender relations, by focusing more on women according to the initial RQS results. The subsidised ITNs vouchers, pocket calendars, *khanga* and mosquito nets bundled with insecticides captured men's attention to the extent of joking about vouchers. Moreover, both subsidised and free mosquito nets involved cash saving or issues that directly involve men, who traditionally control the household economy. Studies conducted in Ghana and Mozambique found that fathers' involvement contributed to improved uptake of immunisation services [91, 203, 206].

8.10 Conclusion and recommendations

Table 6a&6b on pages 203-204, summarises the information flow for IPTi compared to parallel preventive child health interventions. In Tanzania, the political atmosphere is conducive to communicating news about health information, as noted in the presidential letters on malaria and reproductive child health [56, 80]. Health communication should involve health facilities, village offices, gathering places and other appropriate venues. Local health workers can potentially sensitise local leaders and the community at large though their involvement in PHC committees. Moreover, culturally appropriate BCC materials need not be limited to posters displayed at health facilities. The findings have revealed the importance of take-home printed materials such as pocket calendars and vouchers in facilitating gender sensitive discussions about health interventions. Importantly, a good relationship and good communication among service providers, local leaders and communities can help in facilitating delivery and uptake of services. The mothers' satisfaction is as necessary as it is for health providers.

8.11 Recommendations

- There is a need for improved communication within the health system, among the CHMT members, service providers and community leadership. All need improved

interpersonal skills for fostering a good relationship between themselves and clients.

- Service providers need to be given participatory refresher courses in health education.
- Constant monitoring and evaluation is needed in order to understand how service providers and communities respond to health information.

Chapter 9

9. Discussion, conclusions, and Implications for Policy and Research

9.1 Discussion

This chapter provides a reflection on the methods and a synthesis of how the findings address the aim of the study with reference to published literature and theoretical perspectives. This gives the study conclusions, as well as implications for policy and research, for the overall aim, which was examining the factors facilitating and constraining the delivery and uptake of preventive child health interventions in rural southern Tanzania.

9.2 Study limitation

The study relied on different data collection strategies and data collection methods, each with inherent limitations. The limitations of the rapid qualitative study (RQS) include a limited time to pursue issues in depth with respondents beyond the most accessible and willing informants. Such respondents might not necessarily represent everyone in the community [218]. Further information on the RQS is given in a published paper (Annex 1).

The most challenging limitation was separating the qualitative team from other IPTi project activities to which this study was linked. We shared the same vehicles and at some points, qualitative team members participated in other project components. The LAS and IES components involved observations of services and RCH cards as well as discussions with mothers about child health services, both at health facilities and in the community. The observer's influence on behaviour, particularly among service providers, was notable. When I was present in HT village, for example, there was a temporary change in

conducting health education, administering and documenting IPTi. In another village, the NA initially behaved politely but over time she behaved aggressively to mothers and VHWs and at times, she told me *"it is up to you to write or not because I am so tired of people of this village"*.

Due both to the time limitation and the study design, it was not feasible to conduct a quantitative study to establish the magnitude of the issues that arose during in-depth ethnography study, such as service providers demanding unofficial charges for RCH cards, mistrust, the role and fate of VHWs in all study districts.

9.3 Advantages of approach used

The study design relied on mixed methods, a recommended mechanism for maximising the yield of valid data through different data collection strategies [218, 219]. As described in chapter 4, triangulation of information from the different sources enriched this thesis.

The LAS and in-depth ethnography phases as well as mid-term IPTi household survey data helped to understand the community perceptions and behaviours about the strategy and the actual behaviours of those involved in the study. The IES was conducted in only a few areas and could therefore be subject to criticism in terms of generalisation of the findings. However, my prolonged stay in selected villages enabled me to interact with local residents and service providers at health facility and in the community in a way that the other data collection strategies did not allow. My observations at health facilities and in the community, together with informal and formal discussions, unearthed the unofficial and official fees on supposedly free preventive services, mistrust among CHMT members, conspiracy between some villagers and health workers, the roles and fate of VHWs. None of these had featured in the RQS, LAS and quantitative data collection strategies. The influential respondents like DMOs, project implementers, fellow project

staff, and village based informants and other respondents confirmed the extensiveness of socio-cultural barriers to service delivery and uptake of child health interventions in the study settings.

The grounded theory approach applied facilitated an interconnected process in data collection, coding, and identifying the issues in successive data collection, thus allowing the same respondents and others to improve the quality of the data over time. I concur with Manderson et al.,[218] in recommending mixed methods design, triangulating rapid baseline and longitudinal and in-depth ethnographic data collection strategies in similar and other studies. This design has a rich potential to inform development, implementation and evaluation of public health interventions [220, 221].

9.4 The key findings

The key findings in this study centred on factors that facilitated and constrained service delivery and uptake as follows:

Facilitating factors for service delivery included relatively good geographical coverage of health facilities, national policy that allows vertical programmes for preventive services, committed health workers, support from specific programs and community involvement, especially from VHWs, and occasionally, village leaders and shopkeepers.

Constraining factors for preventive service delivery: Interventions for improving child survival were frequently available at the district headquarters and at a local health facility but were not always delivered to children who needed them, due to organisational and management weaknesses within council health management teams and weak community structures such as the district health board and health facility committees. Community structures were not involved in service delivery, management and supervision. Moreover, there was an inefficient flow of information about routine health services and unrealised potential of village health workers.

If the community and health system structures were empowered, they could address issues locally such as technical and logistic failures, provider absenteeism, inadequate supervision, constrained outreach clinics and mistrust among CHMT members, service providers and VHWs.

There was a shortage of qualified health personnel and many existing staff were poorly motivated. There were also periodic national shortages of supplies such as vaccines. The authorities in the districts alone could not manage alone, without support from national level and non-government organisations.

Frequent absenteeism and inadequate supportive supervision discouraged the workers who remained at health facilities. The quantitative evidence from the same districts during this study found that only three-quarters of dispensaries had at least one prescriber and a similar proportion had at least one nurse (75% and 76% respectively). Furthermore, absenteeism was common in both nursing and prescribing cadres: only about 40% of dispensaries had a prescriber or a nurse present on the day of the survey (41% and 43% respectively) [65] (page 216)

Facilitating factors for service uptake included community attitudes towards preventive services; trust in the health system, intensity of community mobilisation and information flow as well as easy access to health services, mother's attitudes towards service providers, family stability and social obligations for mothers.

Constraining factors for service uptake included perceived user charges for supposedly free services, poor attitudes of service providers, cultural norms such as stigma against pregnancy while breastfeeding, lack of father's involvement, village health workers being in contact with children without facilitating their vaccinations and the long distance from alternative health facilities. Moreover, women of childbearing age were under-represented in health facility boards and other local decision making structures. Therefore, they lacked influence on services despite being the major users in person or

through their children. Most of the key findings are related to ineffective management and coordination of service delivery among the CHMTs and community structures.

9.5 Discussion of the key findings

One of the criteria for a well-functioning health system is its ability to bring services closer to people regardless of their geographical location. Rural southern Tanzania has a better geographical coverage network of health infrastructure compared to other parts of African countries [65]. On one hand, such coverage facilitates easy delivery of services, and on the other hand, the network meant easy geographical access to services among the children living near health facilities and outreach posts. However, barriers at national, district, health facility and community levels constrained delivery and uptake of services, as summarised at the end of this section.

Occasional shortages of gas or vaccines nationally tended to affect the capacity of districts to deliver services at health facilities. Dispensaries occasionally lacked services even if they were available at the district headquarters, due to technical and logistic failures caused by inefficient transport and management at district level. The same district managers were apparently better able to mobilise transport for special programme-based interventions such as campaigns, and to supply drugs for curative services.

Delayed payment of electricity bills or evacuation of bees at dispensaries showed how flaws in the management of health facilities contributed to barriers in service provision. Local leaders were not actively involved in planning for and making decisions about running their health services, contrary to the health sector reform guidelines [94]. If empowered with skills and resources, concerned local communities could prevent such delays though health facility boards. Nonetheless, political empowerment of local leadership could also hinder the uptake of services. In this study, because of a lack of

funds to remunerate a security guard and VHW, a health facility board in cooperation with village government and the person in charge of a local dispensary raised funds by introducing user fees on immunisation, contrary to policy guidelines. As found elsewhere in Tanzania, the District Executive Director and several other non-health department leaders influenced the decisions and budgets of health departments. Therefore, the existing good network of health facilities in the study areas fails to realise its true potential for service delivery due to inefficient management and coordination of health system at district, health facility and community levels.

Some service providers facilitated service delivery despite their difficult working environment. Their good attitude to the community made them culturally accepted, and in turn, they delivered better services. However, in the study areas, health facilities were generally understaffed and committed providers were quite few. The majority felt overburdened during and after working hours and at health facilities, at their homes or by visiting clients, neglected by their managers, local leaders and the government, and poorly remunerated. Frequent absenteeism and inadequate supportive supervision discouraged a few workers who remained at health facilities. The quantitative evidence from the same districts during this study found that only three-quarters of dispensaries had at least one prescriber and a similar proportion had at least one nurse (75% and 76% respectively). Furthermore, absenteeism was common in both nursing and prescribing cadres: only about 40% of dispensaries had a prescriber or a nurse present on the day of the survey (41% and 43% respectively)[65]. Such working conditions together with mistrust between providers and community leaders reduced morale among service providers and some of them responded by mistreating mothers. Associations between provider rudeness and low pay are also common in other parts of Africa [203].

Low morale also existed among the CHMT members. Their lack of motivation arose in part from delayed reimbursement of allowances for supervisory visits and mistrust. Mistrust contributed to a lack of team spirit or information sharing among CHMT members, affecting supervision, delivering health services and information to health facilities. Some DMOs and DCCOs "hijacked" the activities planned by RCH coordinators: this warrants further studies to understand the effect that budgeted money from the comprehensive health plan budget has on trust and teamwork spirit among the CHMT members. Promisingly, the DMOs can manage the mistrust, by involving the CHMT members in transparent discussions, joint decision making and discouraging their differences, as reported by a role model DMO in this study. Mistrust and poor cooperation among CHMT members have been described elsewhere in Tanzania [94]. Accountable leadership, financial and human resources are necessary for better child survival actions aimed at reaching poor children[87]

Community involvement facilitated delivery and uptake of interventions linked to special programs such as subsidised and free ITNs, measles and vitamin A supplementation campaigns. With financial incentives, local shopkeepers, community leaders and village criers played active roles even in the hard to reach areas. The local discount voucher agents were motivated by profits realised when they returned the vouchers to regional agents.

Evidence from Tanzania and Kenya suggests that combined methods of delivering ITNs, through social marketing, subsidised and free distribution have helped in increasing coverage [31, 76, 108]. In this study, the local shopkeepers initially favoured the free ITNs but soon they perceived these mixed strategies as a betrayal by the government, because after free net distribution their sales of nets through discount vouchers declined. The time limit did not allow following this up further, although free distribution of nets

has been advocated [105]. There is a need to consider the effect of free bednets on the existing local delivery channels, because sustainability is an important consideration [76, 108].

In agreement with findings from elsewhere in Tanzania and other African countries such as Gambia, Mozambique and South Africa, this study found a promising acceptance of EPI services [28, 69, 89, 203, 222]. Social obligations, perceived benefits of preventive interventions, particularly immunisation, and trust in the health system in southern Tanzania enhanced the acceptability of IPTi [28, 67]. The acceptance of immunisation, IPTi and ITNs among mothers, matched with diffusion of innovation theory that mothers as a group in society would respond to innovations that address their common burden. Mothers knew the social and personal burden of caring for their children and most of them were happy with interventions regardless of how much they knew about what the vaccines are for and how they work [28, 67]. Similarly, studies conducted in Gambia and South Africa described social obligations and mother's uptake of preventive child health interventions without understanding the interventions [203, 222].

The South African study described, as we did, stigma attached to becoming pregnant soon after delivery while breastfeeding. Vulnerable mothers avoided clinics due to a lack of father's support, even when they were in a stable relationship. There is need to address these barriers by encouraging mothers and fathers to participate in ANC and child health services. Fathers' involvement facilitated better use of immunisation in other parts of Africa such as Mozambique, Ghana and Gambia [91, 203, 206, 223].

Consistent with a medical syncretism explanation, the findings have exposed how some service providers described IPTi to mothers as an antipyretic in order to encourage compliance. This sounded appealing to mothers who were desperate for antipyretics, in case a child might develop fever after immunisation. Unfortunately, such messages distorted the real meaning of IPTi and arguably, to some extent service providers

contributed to low awareness about this intervention. Medical syncretism has been described from other parts of Tanzania, with service providers distorting information about biomedical interventions to match the local expectations [176].

Some service providers and community members in this study spread rumours about children who had died after repeated measles vaccinations during campaigns. The intention was to discourage those who might wish to take their children to different campaign posts looking for additional free nets. There were also rumours on (Alu), genetically modified mosquitoes, filarial and trachoma elimination campaigns, as plans to eliminate the nation. These rumours deserve further attention, given the fact that the community members in this area trust local service providers and rely on them more as a source of health information.[65, 67, 168] Reportedly, because of rumours about sterilisation school girls in Cameroon run away during tetanus immunisation campaign [205]. Likewise, apart from widespread resistance to depo-provera and food aid due to fear of sterilising substances to eliminate the population [204], pregnant women in the former Rhodesia (Zimbabwe) and other parts of Africa have avoided using chloroquine (CQ) for prophylaxis, partly due to rumours that it caused abortions and stillbirths [204, 224, 225]. In this area where is a high trust on service providers, they could be playing a better role in providing genuine health education. Service providers are the key agents to facilitate or constrain the flow of information about child interventions [28, 67]. They may need more skills and motivation to improve these roles.

Barriers to delivery reported in this study, including long distance to alternative health facilities, provider absenteeism, stock outs and provider attitudes, are similar to those reported from other remote districts and villages in Tanzania [65, 226, 227]. Moreover, this study confirms all types of user charges as major constraints to both pregnant women and children from seeking ANC and delivery services, especially unmarried young mothers and those in unstable relationships [65, 79, 228].The amount of unofficial

charges was decided by service providers and increased in successive visits as penalties for missing previous ones [228]. Mothers who had not used ANC services were likely to deliver at home and consequently they lacked confidence in seeking early immunisation and other services at health facilities due to perceived accumulated penalties.

As in other parts of Tanzania and Uganda, these findings suggest a prevalent corruption over ANC and RCH cards because of the value attached [116, 202]. In this area, mothers feared additional charges on child RCH cards, which were supposedly free of charge. Despite the introduction of RCH cards labelled *Haiuzwi* (Not for sale), corrupt providers continued to issue the old version. Given the importance attached to RCH cards by the health system, corrupt providers and mothers, there is an obvious need to discourage unofficial charges on them by empowering women to avoid paying for RCH cards that are not marked "Not for Sale".

Local political structures did not facilitate delivery and uptake of interventions. The community representatives in the district health board had little interest in preventive child health services. Likewise, all local leaders of one political party claimed that they were too old to know about child services delivered at health facilities. Men, some of whom were allies of unfriendly providers, dominated in the local health facility boards and political leadership. A particular lack of influence from women of reproductive age in the local decision-making structures was clear, despite their leading role in service utilisation. Unfortunately, women were most affected where local politics triggered misunderstandings between community leaders and local service providers or villagers.

The crucial role of VHWs and options for their sustainable roles

VHWs can help the health system in reaching underserved populations at low cost. Their full potential has not been realised for large routine interventions [211]. Although VHWs are not substitutes for government health services [229]. While the existing literature

shows how VHWs have operated in specific programme settings over time periods of a few months, the research in this thesis shows that some VHWs have continued to work productively without any clear structure supporting them, many years after they were initially recruited. Community leaders, mothers, salaried health workers and one DMO all acknowledged that VHWs played vital roles in delivery of routine services and health campaigns for preventive and curative services. They helped at health facilities, outreach posts and in the community. In the absence of salaried and trained personnel, I observed a long experienced former VHW run the dispensary, prescribe treatment, inject patients, attend ANC clients, weigh and immunise children and help in compiling reports.

However, management problems complicate their roles.

VHWs had no terms of reference and it was not clear to whom they were accountable. Neither was it clear how to retain, support, manage and motivate them. As a result, most of those originally recruited are no longer active and many have moved to other areas. There was no evidence of VHWs playing their originally intended roles in promoting environmental sanitation and hygiene in their areas.

VHWs deserve support as an integral component of the basic health system in which they served [211]. In this study, VHWs facilitated delivery of child health interventions, despite lacking guidelines for their management, supervision and training. A major constraint for sustaining and motivating VHWs was a lack of funding in the district budgets and inadequate village sources of income. Some villages had to introduce user charges on immunisation services in order to raise funds for VHWs. Mothers viewed the charges as a barrier to service utilisation. Unfortunately, unrealistic expectations in terms of remuneration, training and mentoring threatened their sustainability.The poorly motivated VHWs sometimes delivered questionable services, such as requesting unofficial charges, and having contacts with children without facilitating their immunisation. Almost all VHWs in one ward had either resigned or been suspended within six months of my participant observation.

Given the current state of primary health care, and no miracle to solve the human resource problem, there is an urgent need for clear guidelines and policies on VHW recruitment, training, supportive supervision, retention and motivation. Options to sustain VHWs rely most on the commitment of the Ministry of Health and Social Welfare to accept the VHWs, create clear guidelines, specifying their position in the health system, how to recruit, train, motivate and retain them as well as commitment in allocating funds for them.

The study has also presented the findings on the flow of information about health interventions. In line with the diffusion of innovation theory [172], in this area, various channels, actors, time and items shaped the rapidity of information flow and behaviours of service providers and community. Unlike in routine interventions, the intensity of flow of information about special programs or campaigns gained momentum from motivated service providers and community members involved. This study did not find evidence of motivated service providers conducting motivating routine health education sessions for clients. The flow of information at health facilities was one sided, and dominated by providers. A two-way flow of information took place through informal communication in the CHMTs at health facilities and between health facilities and community, but detrimentally so, intensifying mistrust that weakened any spirit of teamwork in service delivery.

Acceptance and uptake of interventions by service providers enhances service delivery. Vitamin A supplementation was a provider friendly intervention because of the simple packages involved. Service providers were proud to issue the net discount vouchers as indirect money to mothers. Those who attended training were equipped with both knowledge and incentives such as *khanga* for their colleagues, and they could reach other women through social networks. In Tanzania, *khanga* and scarves – suitable for both

males and females and offered either free of charge or commercially – are popular in facilitating political campaigns. This popularity of clothing as culturally accepted items for facilitating information flow may potentially be useful for BCC strategies about health interventions, among service providers and in the community.

In contrast, there were some complaints over knowledge sharing, or the lack of, among providers who either attended or missed training opportunities for other interventions, including IPTp and IPTi. Moreover, shortages of cups, water as well as the amount of record keeping on different sources, the need to share information with mothers during administration, and crushing and dissolving tablets into water were considered provider unfriendly processes for delivering IPTi or IPTp as DOT. This scenario of a 'provider unfriendly' intervention could be the underlying reason for unused IPTp among pregnant women reported in this study and elsewhere in Tanzania [116]. with a similar pattern for IPTi [28]. It is surprising that service providers can avoid giving DOT despite their knowledge of the possible consequences on non-uptake. As long as provider and user friendly IPTi is under consideration [23, 27, 28, 89], improved management through close supportive supervision, availability of equipment and water can improve delivery.

Flow of information about campaigns and discount vouchers through mass communication, village criers, service providers and leaders clearly showed a difference in the rapidity of spread of such interventions compared to routine IPTi, EPI and IPTp. The RCH cards, pocket calendars, vouchers, nets and cloth *(khanga)* promoted subsidised ITNs in the community.

Now, I wish to critically examine the BCC materials that were developed based on the rapid ethnographic study, and focussing on the mother's leading role in seeking preventive services. The desire to follow the routine health service approach and

guidelines influenced decisions to display the posters for IPTi at health facilities, anticipating their acceptance because they were locally developed and pre-tested with attractive images and clear captions. The decision was contrary to local villagers suggestions to display the posters at other places in the villages [67]. In reality, there was no convincing evidence from all qualitative and quantitative data collection strategies during implementation that service providers and mothers referred to posters. Health workers were the most important channel of communication but they lacked incentives to communicate to mothers using available BCC materials and other innovative communication strategies that could make health education sessions interactive and more attractive.

The findings have also highlighted the nature of education to fathers about IPTi and other preventive services. The RQS results (Annex 1) portrayed the central role of mothers in decision-making and actual seeking of preventive services for young children. During fieldwork for RQS, the existing information and education materials about preventive services only included mothers and were commonly displayed on the walls at reproductive and child health clinics that were mostly used by women. These findings guided development of BCC materials for IPTi, reinforcing the mother's role. The BCC materials for IPTi were also displayed at health facilities in keeping with pre-existing practice [67].

However, during the longitudinal and in-depth ethnographic phases of this study, it was evident that on one hand, fathers played an important role in facilitating the uptake of services especially when they were well informed. In contrast, fathers who were uninformed were likely to hinder the use of services. For example, some fathers commented that they usually encouraged their wives to take their children to the district hospital whenever services were unavailable at their dispensary. This finding was also supported by interviews and discussions with women. Furthermore, where the information reached fathers, they played active an role in seeking preventive services,

such as taking their children to clinics during distribution of free mosquito nets, and in the discount voucher scheme providing money to their wives for buying more mosquito nets than ever before.

In contrast, many fathers were not aware of IPTi as some of them associated it with environmental hygiene, boiling water and sleeping under ITNs. Others threatened to prohibit their children from taking it because they did not know its meaning, while some of them questioned why healthy children should take SP, which they knew as a tablet for treatment of malaria fever. A lack of BCC materials targeting fathers also contributed to some children missing clinic services if their mothers conceived within a short interval. Moreover, the findings of this study have shown that the BCC materials for IPTi and routine immunisation services, displayed at mother and child health clinics in health facilities hardly reached fathers. Surprisingly, there were clues that some men had perceived these posters as decorative and removed them from health facilities to decorate their homes. Vulnerable mothers avoided clinics due to a lack of father's support, even when they were in a stable relationship.

Thus, as suggested by both male and female respondents and confirmed by rapidity of information flow for campaigns and special programs during this study, it is necessary to consider health education content and strategies that target behaviour change among both fathers and mothers, instead of child health issues being the domain of women and health workers alone. Studies conducted in Ghana, Mozambique and Gambia found that informed fathers could play key role in facilitating uptake of services [91, 203, 206]. For example, the Ghana study showed that where fathers have a higher level of education, programmes that are targeted at helping them in making decisions, their children's use of preventive health services have potential to increase timely immunisation coverage levels [206].

Interdependence of health (and non-health) organisation structures and information flow

The decentralised health system in Tanzania allows the districts to be the centre of actions in terms of service delivery and supervision involving non-health organisation structures and CHMTs. There are structures that include representatives from both health and non-health structures, such as Council/district health boards and health facility [health centres and dispensary] committees. In addition, the District Executive Directors, administrative, planning, accounting officers, and ward councillors are among the non-health people that are responsible for issues such as human resource management as well as financial allocation and control for social services including health department activities in the districts. According to the existing national guidelines, these health and non-health organisational structures are expected to work closely towards health service delivery and management.

The Council Health Service Board liaises with health facility committees and partners with similar interests in health promotion and provision in promoting sustainable health infrastructure, reliable logistics and supply systems as well as promoting Community involvement through sensitisation. Moreover, the Health Centre and Dispensary Committees are supposed to advise the Council on human resource development in terms of recruitment, training, deployment and motivation of health personnel as well as ensuring availability of sufficient and constant resources for dispensary health services

Good information flow should be reflected in harmonious understanding of the policies and strategies that involve both health and non-health structures. However, the findings of this study suggest that there were discrepancies in information flow and actions taken by both health and non-health structures and these negatively affected service delivery. For example, the logistic failures due to delayed payment of electricity bills, removal of bees and a lack of transport, as well as issues of provider attitudes could have been well

addressed if these structures were in good communication and actively working according to the guidelines. Likewise, there should have been an agreement between the CHMTs and community structures in deciding about how to raise resources for health facility services. In contrast, this study has shown how the DMO condemned a decision of a dispensary committee that assumed its rights to introduce user fees on immunisation and child growth monitoring services. Moreover, while the local councillors thought that the VHWs could help at health facilities, the DMO's view was that they should not. Additionally, the local health committees reinstated two suspended VHWs but a salaried staff member rejected them.

The study has also shown how mistrust existed among CHMT members and between salaried staff and VHWs as well as local community leaders, including councillors and village leaders.

The covert and public accusations amongst these structures were intensified by a lack of clear communication mechanisms and lack of common defined goals. In these areas with the highest child mortality in the country, improved services are most needed through well-coordinated efforts among CHMT's and community structures. Therefore, there is a need to study further how the CHMT and community structures understand their roles, how they implement them, to what extent they cooperate in target setting, how they exchange communications, if and how they could improve their communication. There are clear lessons from this study that when information flow was good through health structures and non-health structures, promising outcomes were realised, and such knowledge could be useful in promoting strategies for child survival. Numerous authors have demonstrated the importance of cooperation among health and non-health structures and community participation in health at large. Critical issues in individual and community participation include, among others, allowing the community to make their own realistic decisions, to exert influence over health policies and the allocation of resources. Community involvement can also foster the sense of ownership, participatory

mechanisms for more cooperation within and between the community and wider organisations including heath authorities, community and individual responsibility, importance of lay voices, experiences and skills for sustainable service delivery and utilisation [230-232].

9.5 Conceptual framework for this study

The conceptual framework for this study can be summarised through adapting models developed by Hanson et al., [233] and Olivera-Cruz et al., [229] on constraints to and facilitating factors for access to priority health interventions in low-income countries (Table 6).

The findings presented in this thesis have been conceptualised with a focus on the constraining and facilitating factors for delivery and uptake of preventive child health interventions in rural southern Tanzania. The adopted model highlights the importance of understanding the facilitating and constraining factors for service delivery and uptake, focussing on community and household (level I), health service delivery (level II), health sector policy and strategic management (level III), public policies cutting across sectors (level IV) as well as at the environmental level (level V). This thesis has also shown how information flow about interventions and the characteristics (level VI) of interventions such as direct observed therapy might influence both delivery and uptake.

The facilitating and constraining factors shown in table 6 sometimes interact in affecting service delivery and uptake. Therefore, this conceptual framework suggests a need to understand what happens at individual and other levels. For example, at community and household level (level I), traditional norms constrained both married and unmarried mothers from taking their children to clinic, if they conceived while breastfeeding. Traditionally, such an event was viewed as the mother's irresponsibility because both

sexual practices and foetus are believed to contaminate mother's milk. Apart from fear of being mocked by fellow women at clinics, such mothers also expected and experienced insults from service providers. Nevertheless, some of these mothers had sought, and been denied, denied family planning services from health service delivery level (level II). Provider attitudes and behaviour was shaped by many issues, such as a shortage of qualified staff, lack of motivation, local politics and immediate management from district level supervisors. These reasons either occur alone or interact across all seven levels shown in table 6 in constraining or facilitating service delivery and uptake in different areas.

These findings are useful in advocating development of appropriate BCC strategies targeting community and service-delivery levels (level VII). Nevertheless, this study has shown that a BCC strategy alone does not guarantee that service providers and community behave as anticipated by those who bring the materials and communication strategies. There is much room for improving management and policies: issues that require actions involving recruitment and remuneration at health sector policy and management levels as well as public policy cutting across different levels (levels III and IV).

In conceptualising the findings of this study, it is also clear that constraints in delivery of supposedly direct observed therapeutic (DOT) interventions might lead to constraints in service uptake. Therefore, this leads to the importance of understanding the constraints of issues such as delivery and uptake of IPTi and IPTp and other DOT's (levels I, II and VI). Moreover, it is important to consider different approaches, if one needs to uncover issues such as local politics, mistrusts among villagers, community leaders, local health workers and CHMT members as well as inefficient community structures (e.g. district and health facility boards) and under representation of women of child bearing age in decision making structures. It was through a prolonged engagement with actors at levels I, II and III that this study was able to reveal such constraints and their broad impact on service

delivery and uptake. This approach also enabled an understanding of facilitating factors, when these levels worked together in planning and execution of special programme based interventions, such as discount voucher scheme for ITNs and integrated campaigns for child immunisation and distribution of free ITNs. Central to such success was motivation. The findings discussed in this study are also useful in informing other studies aimed at understanding the relevance of considering health facility and community levels in service supervision, delivery and management. Surprisingly, this study has shown how the supervisors from district level missed the opportunity to get community feedback during routine supportive supervision visits. Moreover, there was no evidence of two-way communication between service delivery side and users, at least through community structures. The gap in cooperation among these levels and overdependence of health sector on other sectors e.g. public policies cutting across sectors (level IV) contributed to persistent but easily avoidable logistical and technical failures due to a lack of mechanisms and initiatives for users to solve their own problems.

The conceptual framework shown in table 8a and 8b can help in advocating the need to empower both health system and community structures towards improvement of delivery and uptake of preventive child health interventions in the study areas and similar settings.

Table 8a: A summary of facilitating factors and barriers to delivery of child health interventions in rural southern Tanzania

Level of constraints/facilitators	*Type of constraint*	*Type of facilitating factors*
I: Community and household	Social stigma (pregnancy while breastfeeding, marital status (unmarried, divorced most vulnerable) but also those in stable relationships	Social norms on protecting pregnant women and young children
	Mother's illness, Mothers & children travelling away without RCH card, ITNs	Mothers obligation in order to maintain social status & avoid blames from service providers
	Perceived harm of interventions e.g. large babies due to IPTp	Father's support
	Villages lack financial resources to run services, unpaid local leadership	community trusts health system
	Local politics, local leaders vs. villagers, local vs. service providers, health facility boards inadequately involved in management, women of child bearing group voice not represented decision making	Service providers do not interfere local protections
	Distance to & waiting time at alternative facilities	Motivated local leaders, village criers & shopkeepers (In special programs)
	Constraints starting from seeking family planning, ANC, birth assistance	
II: Health services delivery	Weak supportive supervision	Supportive supervision & feedback from special programs
	Stock outs/ supplies available but delayed	Researcher's influence
	Technical failures	Staff attitudes& good cooperation with community in planning service delivery schedules
	Staff (shortage, absenteeism, overworking, lack of morale, attitudes)	VHWs role [Drug description dispensing, ANC, assisting deliveries, weighing & vaccination, home based care, issuing vouchers, running outreach clinics, campaigns, record keeping etc].
	Poor team work	No restricted access to all government RCH clinics
	Lack of diagnostic equipment at dispensaries	
	user charges on supposedly free services (RCH cards, vouchers, immunisation and growth monitoring) constrained outreach clinics	
III: Health sector policy & strategic management	Logistic & technical failures (due to transport mismanagement)	Committed CHMTs
	Mistrust & lack of team work among CHMT members	Role model leader (DMO) in participatory decision making (team work)
	Routine supervision visits by unmotivated supervisors, (Too quick, lacks community feedback),	Logistic support from special programs
	Limited budget in the CHMTs	Guidelines from the Ministry-Free immunisation and other RCH services
	Supervisor's prioritise better paying interventions	
	Ineffective community influence: district health board & influential political leaders (women group) not concerned with child health services (Too old or wait for someone to invite them)	
	Management system (employment & remunerations)	

Levels I-V adapted from Hanson et al[1] and Olivera-Cruz et al[2]

Table8b: A summary of facilitating factors and barriers to delivery of child health interventions in rural southern Tanzania

Level of constraints/facilitators	*Type of constraint*	*Type of facilitating factors*
IV: Public Policies cutting across sectors	Decentralised system, social sector including health over dependence on bureaucratic decision making & resource allocation & management of health infrastructure, payment for electricity bills etc (DED, Accountant, planning officer, natural resources department), Chronic staff accommodation problem	
	No clear guidelines for recruitment & management of VHWs, despite their known roles	Decentralisation and authority at district level
	Limited qualified human resource (national crisis)	School teachers, other local civil servants also play role during campaigns
	Cooperative societies no longer delivering free pesticides to peasants: Insecticide for ITN adapted in food& cash crops production	
	Apprehensive local discount agents due to free delivered ITNs	
V: Environmental characteristics	Southern Tanzania, historically unattractive to skilled personnel, due to weak communication and transport infrastructure etc.	Political will from national, regional, district and community level
	Acute water shortage at health facilities and in the community	Sensitised leadership
	Transport problems to and from rural areas during rain seasons, due to poor roads	
VI: Characteristics of interventions	Direct observed therapy for IPTi & IPTp: provider unfriendly, crushing, dissolving and administration, lack of adequate cups, spoons & tablets crushing tools, water, water purifiers, documentation	Vitamin A is provider friendly packed, Subsidised & free delivered ITNs [serviced provider & community agents (shopkeepers & leaders) friendly because of financial incentives
VII: Information flow strategies	Posters and job aid rarely used, one way-provider power dominated communication, unattractive health education sessions at health facilities, gender biased BCC strategy sidelining fathers	Community listens to service providers
	Local networks spread detrimental rumours about interventions and relationships between salaried staff, VHWs and local leadership	Items in BCC strategy for subsidised nets [pocket calendars, vouchers, piece clothes & nets]
	On the grounds of desire to enhance uptake, some service providers distorted information about interventions,	Community participation in mobilisation (motivated leaders, shop keepers, village criers), radio etc

Levels 1-V adapted from Hanson et al[1] and Olivera-Cruz et al[2]

9.6 Overall Conclusions

This thesis has examined the socio-cultural perspectives of delivery and uptake of child health interventions in rural southern Tanzania. In doing so, it shows that in this poor setting, health system and socio-cultural and political factors as well as managerial factors overlapped in facilitating and constraining the delivery and uptake of preventive child health interventions. Children of poor mothers (unmarried or divorced), particularly in remote areas, were most likely to miss preventive services, due to user charges that constrained their mothers from attending ANC and delivery care. Mistrust among CHMT members, service providers, village leaders and community members, logistic and technical failures, absenteeism and other constraints could be managed locally, through improved communication within and between health system and community through DHBs, health facility boards and service providers at health facilities.

In the short term, VHWs can potentially help in promotion and delivery of child health interventions in the study areas and similar settings with limited qualified health workers. The flow of information about health interventions is currently inefficient because service providers are not motivated to conduct client friendly health education sessions by using the available and new BCC materials. A greater intensity of BCC activities, conducted beyond health facilities and using various take home materials, could facilitate rapidity of flow of information about health interventions, and hence improved uptake.

9.7 Policy implications

- There is a need promote the involvement of fathers in facilitating or seeking preventive child health services, through an appropriate BCC strategy.
- As key agents in the information flow process, service providers should have refresher courses and incentives to facilitate client friendly health education, using job

aids and other innovative approaches. Service providers need to provide constructive interactive (2-way) information flow.

- There is a need to intensify the initiatives that discourage corruption on ANC, child delivery and immunisation services, including ANC and RCH cards, by sensitising mothers and fathers about their entitlements for these services as well as only using RCH cards labelled 'not for sale'.
- There is a need for the Ministry of Health to develop guidelines for recruitment, training, use and management of VHWs, considering their potential roles.
- Improved communication within and between health system and community through DHB and health facility boards as well as better management of mistrust, logistic and technical failures could improve service delivery and utilisation of services. These bodies also need skills for harmonising relationships among each other.
- Women of childbearing age need to be empowered by involving them in decision-making structures, e.g. village, ward and health facility committees.
- CHMT members need to be motivated to conduct thorough supportive supervision at health facilities as well as seeking community opinions, particularly from mothers, about barriers to service utilisation and areas requiring improvements.
- There is a need for the government to support local initiatives in constructing houses as a means to motivate health workers in rural areas.
- Moreover, this study supports the scientific studies aiming at developing provider and child friendly interventions in order to enhance delivery and uptake.

9.7 Research implications

- Further studies are needed to understand the quantity of children who miss services because of migration and what is needed to help sick mothers in seeking care.

- There is a need to conduct a study to understand the effect of budgeted money from comprehensive health plan budget on trust and team spirit among CHMT members.
- The effect of free delivery of ITNs alongside the discount scheme needs to be studied, particularly in relation to the sustainability of interventions.
- It is worth studying the roles of pieces of cloth, scarves, pocket calendars, and other culturally accepted items in BCC strategies and information flow about child health interventions.
- Lastly, this study recommends a need to assess the role of local health facility boards in facilitating or constraining delivery and uptake of child health interventions.

List of references

1. WHO, *Health statistics and health information systems.*
2. WHO, *Child deaths still falling, but more slowly.* Bulletin of the World Health Organization,, 2000. **78**(10).
3. TheWorldBank. *Health system financing and child health.* [cited 15/11/2008]; Available from: http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTHEALTHNUTRITIONANDPOPULATION/EXTHSD/0,,contentMDK:20190819~menuPK:438812~pagePK:148956~piPK:216618~theSitePK:376793,00.html.
4. Black, R.E., S.S. Morris, and J. Bryce, *Where and why are 10 million children dying every year?* Lancet, 2003. **361**(9376): p. 2226-34.
5. Jones, G., et al., *How many child deaths can we prevent this year?* Lancet, 2003. **362**(9377): p. 65-71.
6. Bryce, J., et al., *Reducing child mortality: can public health deliver?* Lancet, 2003. **362**(9378): p. 159-64.
7. Wagstaff, A., et al., *Child health: reaching the poor.* Am J Public Health, 2004. **94**(5): p. 726-36.
8. UN. *Millenium Development Goals: Goal 4: Reduce Child Mortality.* [cited UN document no.A/56/326,
]; Available from: http://www.un.org/millenniumgoals/childhealth.shtml.
9. Mukelabai, K. and S.H.A. UNICEF, *Achieving the Millennium Development Goal to reduce under-five child mortality: a UNICEF perspective. Proceedings of the Seminar on the Relevance of Population Aspects for the Achievement of the Millennium Development Goals, New York, 17-19 November, 2004. New York: United Nations.* 2005.
10. UN, *General Assembly Thematic Debate on the Millennium Development Goals "Recognising the achievements, addressing challenges and getting back on track to achieve the MDGs by 2015": pannel discussion on health.* 2008.
11. Bryce, J., et al., *Countdown to 2015: tracking intervention coverage for child survival.* Lancet, 2006. **368**(9541): p. 1067-76.
12. Victora, C.G., et al., *Context matters: interpreting impact findings in child survival evaluations.* Health Policy Plan., 2005. **20**(suppl_1): p. i18-31.
13. TheFreeDictionary, *http://www.thefreedictionary.com/preventive Accessed on 28/04/2008.*
14. http://mentalhealth.samhsa.gov/SAMHSA, *Special Report Preventive Interventions Under Managed Care*
15. Bryce, J., et al., *Can the world afford to save the lives of 6 million children each year?* Lancet, 2005. **365**(9478): p. 2193-200.
16. Bloom D, Canning D , and W. M, *"The Value of Vaccination.* World Economics 2005 **6** (3): p. 15–39.
17. WHO and UNICEF, *State of the world's vaccines and immunization.* 1996(WHO/GPV/96.04 • DISTR: GENERAL).
18. WHO, UNICEF, and W. Bank, *State of the World's Vaccines and Immunization.* 2003(2003 Revised Edition).
19. Greenwood, B., *Review: Intermittent preventive treatment--a new approach to the prevention of malaria in children in areas with seasonal malaria transmission.* Trop Med Int Health, 2006. **11**(7): p. 983-91.
20. Holtz, T.H., et al., *Use of antenatal care services and intermittent preventive treatment for malaria among pregnant women in Blantyre District, Malawi.* Trop Med Int Health, 2004. **9**(1): p. 77-82.

21. Cisse, B., et al., *Seasonal intermittent preventive treatment with artesunate and sulfadoxine-pyrimethamine for prevention of malaria in Senegalese children: a randomised, placebo-controlled, double-blind trial.* Lancet, 2006. **367**(9511): p. 659-67.
22. Dicko, A., et al., *Impact of intermittent preventive treatment with sulphadoxine-pyrimethamine targeting the transmission season on the incidence of clinical malaria in children in Mali.* Malar J, 2008. **7**: p. 123.
23. IOM, *Assessment of the Role of Intermittent Preventive Treatment for Malaria in Infants: Letter Report.* 2008.
24. Schellenberg, D., et al., *Intermittent treatment for malaria and anaemia control at time of routine vaccinations in Tanzanian infants: a randomised, placebo-controlled trial.* Lancet, 2001. **357**(9267): p. 1471-7.
25. Massaga, J.J., et al., *Effect of intermittent treatment with amodiaquine on anaemia and malarial fevers in infants in Tanzania: a randomised placebo-controlled trial.* Lancet, 2003. **361**(9372): p. 1853-60.
26. Chandramohan, D., et al., *Cluster randomised trial of intermittent preventive treatment for malaria in infants in area of high, seasonal transmission in Ghana.* BMJ, 2005. **331**(7519): p. 727-33.
27. IPTi-Consortium. *http://www.ipti-malaria.org/.* [cited; Available from: http://www.ipti-malaria.org/.
28. Pool, R., et al., *The acceptability of intermittent preventive treatment of malaria in infants (IPTi) delivered through the expanded programme of immunization in southern Tanzania.* Malar J, 2008. **7**: p. 213.
29. Lengeler, C., *Insecticide-treated nets for malaria control: real gains.* Bull World Health Organ, 2004. **82**(2): p. 84.
30. RBM. *Abuja Declaration The Abuja Declaration and the Plan of Action An Extract from The African Summit on Roll Back Malaria, Abuja, 25 April 2000 (WHO/CDS/RBM/2000.17).* 2000.
31. Khatib, R.A., et al., *Markets, voucher subsidies and free nets combine to achieve high bed net coverage in rural Tanzania.* Malar J, 2008. **7**: p. 98.
32. Schellenberg, J.R., et al., *Effect of large-scale social marketing of insecticide-treated nets on child survival in rural Tanzania.* Lancet, 2001. **357**(9264): p. 1241-7.
33. Skarbinski, J., et al., *Distribution of free untreated bednets bundled with insecticide via an integrated child health campaign in Lindi Region, Tanzania: Lessons for furture campaigns.* Am J Trop Med Hyg, 2007. **76**(6): p. 1100-1106.
34. National Bureau of Statistics Dar es Salaam, Tanzania, and U.R.o. Tanzania, *Tanzania: DHS, 2004 - Final Report* 2005, reports@measuredhs.com: ORC Macro Calverton, Maryland, USA.
35. Binka, F. and P. Akweongo, *Prevention of malaria using ITNs: potential for achieving the millennium development goals.* Curr Mol Med, 2006. **6**(2): p. 261-7.
36. Mushi, A.K., et al., *Targeted subsidy for malaria control with treated nets using a discount voucher system in Tanzania.* Health Policy Plan, 2003. **18**(2): p. 163-71.
37. Tami, A., et al., *Use and misuse of a discount voucher scheme as a subsidy for insecticide-treated nets for malaria control in southern Tanzania.* Health Policy Plan, 2006. **21**(1): p. 1-9.
38. Mulligan, J.A., J. Yukich, and K. Hanson, *Costs and effects of the Tanzanian national voucher scheme for insecticide-treated nets.* Malar J, 2008. **7**: p. 32.
39. Snow, R.W., et al., *The global distribution of clinical episodes of Plasmodium falciparum malaria,.* Nature 2005 **434** p. 214-217.
40. WHO, *World Malaria Report 2008.* 2008.
41. WHO, *Press Release WHA/4 15 May 1998 THE WORLD HEALTH REPORT 1998.* 1998.

42. Rowe, A.K., et al., *The burden of malaria mortality among African children in the year 2000.* Int J Epidemiol, 2006. **35**(3): p. 691-704.
43. Unicef, *The state of world's children.* 1998.
44. RBM, *AFRICA MALARIA REPORT 2003* http://www.rollbackmalaria.org/amd2003/amr2003/ch1.htm. 2003.
45. RBM, *2001-2010 United Nations Decade to Roll Back Malaria* http://www.rollbackmalaria.org/cmc_upload/0/000/015/370/RBMInfosheet_3.htm
46. WHO, *The World Health Report 2008.* 2008.
47. Murphy, S.C. and J.G. Breman, *Gaps in the childhood malaria burden in Africa: cerebral malaria, neurological sequelae, anemia, respiratory distress, hypoglycemia, and complications of pregnancy.* Am J Trop Med Hyg, 2001. **64**(1-2 Suppl): p. 57-67.
48. Olumese, P., *Epidemiology and surveillance: changing the global picture of malaria--myth or reality?* Acta Trop, 2005. **95**(3): p. 265-9.
49. WHO, *Message of the Regional Director: Together we can beat malaria : Africa Malaria Day, 25 APRIL 2005* http://www.afro.who.int/regionaldirector/speeches/rd20050425.html 2005.
50. WHO, *WHO is fully committed in achieving the Millennium Development Goals, WHO press release 25 February 2008,* http://www.afro.who.int/press/2008/pr20080225.html 2008.
51. M.R, P., *Malaria and the Importance of People: .* Development in Practice, 2001 **11** (1): p. pp. 86-91.
52. Gallup, J.L. and J.D. Sachs, *The economic burden of malaria.* Am J Trop Med Hyg, 2001. **64**(1-2 Suppl): p. 85-96.
53. WHO, *World malaria report.* 2008.
54. WHO, http://www.who.int/hac/crises/tza/background/Tanzania_Feb05.pdf 2005.
55. MoH, *The National Malaria Medium Term Strategic Plan 2002-07,* M.o.h. Tanzania, Editor. 2003.
56. URT, *End of month presidential speech to the nation, 31st July 2004 united republic of Tanzania, 2004.* http://www.tanzania.go.tz/hotuba/hotuba/040731_Wananchi.htm 2004.
57. Schellenberg, D., et al., *The changing epidemiology of malaria in Ifakara Town, southern Tanzania.* Trop Med Int Health, 2004. **9**(1): p. 68-76.
58. RBM, *Report of the Fourth Meeting of the RBM Partnership's Working Group on Scalable Malaria Vector Control (WIN) Basel, Switzerland 24-26 October, 2007,* http://rbm.who.int/partnership/wg/wg_itn/docs/RBMWIN4_MeetingReport.pdf 2007.
59. URT, *National Road Map Strategic Plan; Reduction of Martenal and Newborn Deaths in Tanzania 2006-2015.* 2006.
60. MoH, http://www.moh.go.tz/health%20facilities.php
61. AMREF, *Malaria Control and Strategy 2006-2010, the African Medical Research Foundation.* 2006.
62. MOHSW-URT, *Ministry of Health and Social Welfare National Roadmap Strategic Plan, Reduction of Maternal and Newborn Deaths in Tanzania (2006-2015).* 2006.
63. GAVI, *Evaluation of GAVI Immunisation Services Support Funding Case Study: Tanzania* http://www.changeproject.org/pubs/GAVI_Tanzania_final.pdf. 2004.
64. MoH, *Vaccination guideline [Mwongozo wa chanjo] Ministry of Health in Tanzania* 2004.
65. Armstrong Schellenberg, J.R., et al., *Health and survival of young children in southern Tanzania.* BMC Public Health, 2008. **8**: p. 194.
66. Schellenberg, D., et al., *The silent burden of anaemia in Tanzanian children: a community-based study.* Bull World Health Organ, 2003. **81**(8): p. 581-90.

67. Mushi, A.K., et al., *Development of a behaviour change communication strategy for a vaccination-linked malaria control tool in southern Tanzania.* Malar J, 2008. 7(1): p. 191.
68. Schellenberg, D., et al., *Community Effectiveness of Intermittent Preventive Treatment delivered through the Expanded Programme of Immunisation for Malaria and Anaemia Control in Tanzanian Infants: A Collaborative Funding proposal.* 2003.
69. Manzi, F., et al., *Intermittent preventive treatment for malaria and anaemia control in Tanzanian infants; the development and implementation of a public health strategy.* Trans R Soc Trop Med Hyg, 2008.
70. Campbell, C.C., *Halting the toll of malaria in Africa.* Am J Trop Med Hyg, 2008. 78(6): p. 851-3.
71. Janson, A., *Shed some light on darkness: will Tanzania reach the millennium development goals?* Acta Paediatr, 2007. 96(6): p. 781-6.
72. Archive, I., *Child Mortality Rates Decrease Dramatically in Tanzania (IDRC Archive)* http://www.idrc.ca/en/ev-66223-201-1-DO_TOPIC.html
73. Masanja, H., et al., *Child survival gains in Tanzania: analysis of data from demographic and health surveys.* Lancet, 2008. 371(9620): p. 1276-83.
74. Bhattarai, A., et al., *Impact of artemisinin-based combination therapy and insecticide-treated nets on malaria burden in Zanzibar.* PLoS Med, 2007. 4(11): p. e309.
75. Hanson, K., et al., *Cost-effectiveness of social marketing of insecticide-treated nets for malaria control in the United Republic of Tanzania.* Bull World Health Organ, 2003. 81(4): p. 269-76.
76. Lengeler, C., *Insecticide-treated bed nets and curtains for preventing malaria.* Cochrane Database Syst Rev, 2004(2): p. CD000363.
77. PSI, *PSI Tanzania* http://www.psi.org/where_we_work/tanzania.html.
78. Kikumbih, N., et al., *The economics of social marketing: the case of mosquito nets in Tanzania.* Soc Sci Med, 2005. 60(2): p. 369-81.
79. Mrisho, M., et al., *Factors affecting home delivery in rural Tanzania.* Trop Med Int Health, 2007. 12(7): p. 862-72.
80. AfyaMtandao, http://www.afyamtandao.org/news_events/view_news_item.php?id=259&intVariationID=1&szTitle=Current.
81. www.fightmalaria.net, *Tanzania: Bush Unveils 5.2m-Bednet Plan to Fight Malaria*
82. Samarasekera, U., *Drug subsidy could help Tanzania tackle malaria.* Lancet, 2008. 371(9622): p. 1403-6.
83. Kowalewski, M., A. Jahn, and S.S. Kimatta, *Why do at-risk mothers fail to reach referral level? Barriers beyond distance and cost.* Afr J Reprod Health, 2000. 4(1): p. 100-9.
84. Abel-Smith, B. and P. Rawal, *Can the poor afford 'free' health services? A case study of Tanzania.* Health Policy Plan., 1992. 7(4): p. 329-341.
85. Tanzania-National-Websiste, *2002 Population and housing census Tanzania:* http://www.tanzania.go.tz/census/. 2002, Tanzania national website.
86. Victora, C.G., et al., *Applying an equity lens to child health and mortality: more of the same is not enough.* Lancet, 2003. 362(9379): p. 233-41.
87. Claeson, M., et al., *Knowledge into action for child survival.* Lancet, 2003. 362(9380): p. 323-7.
88. Kowalewski, M., P. Mujinja, and A. Jahn, *Can mothers afford maternal health care costs? User costs of maternity services in rural Tanzania.* Afr J Reprod Health, 2002. 6(1): p. 65-73.

89. Pool, R., et al., *Community response to intermittent preventive treatment delivered to infants (IPTi) through the EPI system in Manhica, Mozambique.* Trop Med Int Health, 2006. **11**(11): p. 1670-8.
90. Bosu, W.K., et al., *Factors influencing attendance to immunization sessions for children in a rural district of Ghana.* Acta Trop, 1997. **68**(3): p. 259-67.
91. Cutts, F.T., et al., *Evaluation of factors influencing vaccine uptake in Mozambique.* Int J Epidemiol, 1989. **18**(2): p. 427-33.
92. Hanlon, P., et al., *Factors influencing vaccination compliance in peri-urban Gambian children.* J Trop Med Hyg, 1988. **91**(1): p. 29-33.
93. Schellenberg, J.A., et al., *Inequities among the very poor: health care for children in rural southern Tanzania.* Lancet, 2003. **361**(9357): p. 561-6.
94. Semali, I.A., M. Tanner, and D. de Savigny, *Decentralizing EPI services and prospects for increasing coverage: the case of Tanzania.* Int J Health Plann Manage, 2005. **20**(1): p. 21-39.
95. Simon, J.L., et al., *How will the reduction of tariffs and taxes on insecticide-treated bednets affect household purchases?* Bull World Health Organ, 2002. **80**(11): p. 892-9.
96. Goodman, C.A., et al., *Comparison of the cost and cost-effectiveness of insecticide-treated bednets and residual house-spraying in KwaZulu-Natal, South Africa.* Trop Med Int Health, 2001. **6**(4): p. 280-95.
97. Magesa, S.M., et al., *Creating an "enabling environment" for taking insecticide treated nets to national scale: the Tanzanian experience.* Malar J, 2005. **4**: p. 34.
98. Adongo, P.B., B. Kirkwood, and C. Kendall, *How local community knowledge about malaria affects insecticide-treated net use in northern Ghana.* Trop Med Int Health, 2005. **10**(4): p. 366-78.
99. Schellenberg, J.A., et al., *Re-treatment of mosquito nets with insecticide.* Trans R Soc Trop Med Hyg, 2002. **96**(4): p. 368-9.
100. Panter-Brick, C., et al., *Culturally compelling strategies for behaviour change: a social ecology model and case study in malaria prevention.* Soc Sci Med, 2006. **62**(11): p. 2810-25.
101. Snow, R.W., et al., *The effect of delivery mechanisms on the uptake of bed net re-impregnation in Kilifi District, Kenya.* Health Policy Plan, 1999. **14**(1): p. 18-25.
102. Aikins, M.K., H. Pickering, and B.M. Greenwood, *Attitudes to malaria, traditional practices and bednets (mosquito nets) as vector control measures: a comparative study in five west African countries.* J Trop Med Hyg, 1994. **97**(2): p. 81-6.
103. Doannio, J.M., et al., *[Influence of social perceptions and practices on the use of bednets in the malaria control programme in Ivory Coast (West Africa)].* Med Trop (Mars), 2006. **66**(1): p. 45-52.
104. Binka, F.N. and P. Adongo, *Acceptability and use of insecticide impregnated bednets in northern Ghana.* Trop Med Int Health, 1997. **2**(5): p. 499-507.
105. Curtis, C., et al., *Scaling-up coverage with insecticide-treated nets against malaria in Africa: who should pay?* Lancet Infect Dis, 2003. **3**(5): p. 304-7.
106. Kurowski C, et al., *Scaling up priority health interventions in Tanzania: the human resources challenge.* Health Policy and Planning 2007. **22**: p. 113–127.
107. Lengeler C, et al., *Quick wins versus sustainability: options for the upscaling of insecticide-treated nets.* American Journal of Tropical Medicine and Hygiene, 2007. 77((6 Suppl):): p. 222-6.
108. Lines, J., et al., *Scaling-up and sustaining insecticide-treated net coverage.* Lancet Infect Dis, 2003. **3**(8): p. 465-6; discussion 467-8.
109. Binka, F. and P. Akweongo, *Prevention of malaria using ITNs: Potential for achieving the millennium development goals.* Current Molecular Medicine, 2006. **6**(2): p. 261-267.

110. Abdulla, S., et al., *Impact on malaria morbidity of a programme supplying insecticide treated nets in children aged under 2 years in Tanzania: community cross sectional study.* BMJ, 2001. **322**(7281): p. 270-3.
111. Marchant T, et al., *Monitoring and Evaluation of the TNVS: Report on 2007 TNVS Household, Facility services and Facility users surveys (a comparison across three survey years). Final version report.* 2007.
112. Tarimo, S.D., *Appraisal on the prevalence of malaria and anaemia in pregnancy and factors influencing uptake of intermittent preventive therapy with sulfadoxine-pyrimethamine in Kibaha district, Tanzania.* East Afr J Public Health, 2007. **4**(2): p. 80-3.
113. Anders, K., et al., *Timing of intermittent preventive treatment for malaria during pregnancy and the implications of current policy on early uptake in north-east Tanzania.* Malar J, 2008. **7**: p. 79.
114. Kabanywanyi, A.M., et al., *Malaria in pregnant women in an area with sustained high coverage of insecticide-treated bed nets.* Malar J, 2008. **7**: p. 133.
115. Gikandi, P.W., et al., *Access and barriers to measures targeted to prevent malaria in pregnancy in rural Kenya.* Trop Med Int Health, 2008. **13**(2): p. 208-17.
116. Mubyazi, G., et al., *Intermittent preventive treatment of malaria during pregnancy: a qualitative study of knowledge, attitudes and practices of district health managers, antenatal care staff and pregnant women in Korogwe District, North-Eastern Tanzania.* Malar J, 2005. **4**: p. 31.
117. Nsimba, S.E., *How sulfadoxine-pyrimethamine (SP) was perceived in some rural communities after phasing out chloroquine (CQ) as a first-line drug for uncomplicated malaria in Tanzania: lessons to learn towards moving from monotherapy to fixed combination therapy.* J Ethnobiol Ethnomed, 2006. **2**: p. 5.
118. Eriksen, J., et al., *Adoption of the new antimalarial drug policy in Tanzania--a cross-sectional study in the community.* Trop Med Int Health, 2005. **10**(10): p. 1038-46.
119. Mubyazi, G.M. and M.A. Gonzalez-Block, *Research influence on antimalarial drug policy change in Tanzania: case study of replacing chloroquine with sulfadoxine-pyrimethamine as the first-line drug.* Malar J, 2005. **4**: p. 51.
120. Tarimo, D.S. and D.A. Malekela, *Health workers perceptions on chloroquine and sulfadoxine/sulfalene pyrimethamine monotherapies: implications for the change to combination therapy of artemether/lumefantrine in Tanzania.* East Afr J Public Health, 2007. **4**(1): p. 43-6.
121. Tarimo, D.S., J.N. Minjas, and I.C. Bygbjerg, *Perception of chloroquine efficacy and alternative treatments for uncomplicated malaria in children in a holoendemic area of Tanzania: implications for the change of treatment policy.* Trop Med Int Health, 2001. **6**(12): p. 992-7.
122. Mubyazi, G.M., et al., *Prospects, achievements, challenges and opportunities for scaling-up malaria chemoprevention in pregnancy in Tanzania: the perspective of national level officers.* Malar J, 2008. **7**: p. 135.
123. Chambuso, M., V. Mugoyela, and W. Kalala, *Consumer survey of malaria fact card: an educational and communication tool in Tanzania.* East Afr J Public Health, 2007. **4**(2): p. 59-63.
124. 2008-Novartis-AG, *Novartis delivers 4.7 million treatments of anti-malarial medicine to Tanzania on Africa Malaria Day* http://www.corporatecitizenship.novartis.com/news/2007-04-25_coartem.shtml 2008.
125. Njau, J.D., et al., *The costs of introducing artemisinin-based combination therapy: evidence from district-wide implementation in rural Tanzania.* Malar J, 2008. **7**: p. 4.

126. website@theglobalfund.org, *http://www.theglobalfund.org/en/in_action/events/africamalariaday/2004/factsheet_coartem/*
127. Materia, E., et al., *A community survey on maternal and child health services utilization in rural Ethiopia.* Eur J Epidemiol, 1993. **9**(5): p. 511-6.
128. Levy-Bruhl, D., et al., *The Bamako Initiative in Benin and Guinea: improving the effectiveness of primary health care.* Int J Health Plann Manage, 1997. **12 Suppl 1**: p. S49-79.
129. Knippenberg, R., et al., *Sustainability of primary health care including expanded program of immunizations in Bamako Initiative programs in West Africa: an assessment of 5 years' field experience in Benin and Guinea.* Int J Health Plann Manage, 1997. **12 Suppl 1**: p. S9-28.
130. Desgrees du Lou, A. and G. Pison, *Barriers to universal child immunization in rural Senegal 5 years after the accelerated Expanded Programme on Immunization.* Bull World Health Organ, 1994. **72**(5): p. 751-9.
131. Ryman, T.K., V. Dietz, and K.L. Cairns, *Too little but not too late: results of a literature review to improve routine immunization programs in developing countries.* BMC Health Serv Res, 2008. **8**: p. 134.
132. Onwujekwe, O., et al., *Consumers stated and revealed preferences for community health workers and other strategies for the provision of timely and appropriate treatment of malaria in southeast Nigeria.* Malar J, 2006. **5**: p. 117.
133. Onwujekwe, O., et al., *Feasibility of a community health worker strategy for providing near and appropriate treatment of malaria in southeast Nigeria: an analysis of activities, costs and outcomes.* Acta Trop, 2007. **101**(2): p. 95-105.
134. Moerman, F., et al., *The contribution of health-care services to a sound and sustainable malaria-control policy.* Lancet Infect Dis, 2003. **3**(2): p. 99-102.
135. Anand, S. and T. Barnighausen, *Health workers and vaccination coverage in developing countries: an econometric analysis.* Lancet, 2007. **369**(9569): p. 1277-85.
136. Rolfe, B., et al., *The crisis in human resources for health care and the potential of a 'retired' workforce: case study of the independent midwifery sector in Tanzania.* Health Policy Plan., 2008: p. czm049.
137. Gilson, L., *National community health worker programmes.* World Health Forum, 1990. **11**(1): p. 85-6.
138. UNICEF, *What Works for Children in South Asia:Community health workers*, The United Nations Children's Fund (UNICEF) Regional Office for South Asia, Editor. 2004.
139. Lewin, S.A., et al., *Lay health workers in primary and community health care.* Cochrane Database Syst Rev, 2005(1): p. CD004015.
140. Doherty, T.M. and M. Coetzee, *Community health workers and professional nurses: defining the roles and understanding the relationships.* Public Health Nurs, 2005. **22**(4): p. 360-5.
141. Chopra, M. and D. Wilkinson, *Vaccination coverage is higher in children living in areas with community health workers in rural South Africa.* J Trop Pediatr, 1997. **43**(6): p. 372-4.
142. Kidane, G. and R.H. Morrow, *Teaching mothers to provide home treatment of malaria in Tigray, Ethiopia: a randomised trial.* Lancet, 2000. **356**(9229): p. 550-5.
143. Pagnoni, F., et al., *A community-based programme to provide prompt and adequate treatment of presumptive malaria in children.* Trans R Soc Trop Med Hyg, 1997. **91**(5): p. 512-7.
144. Charleston, R., L. Johnson, and L. Tam, *CHWs trained in ARI management.* Sante Salud, 1994(4): p. 14.

145. Hadi, A., *Management of acute respiratory infections by community health volunteers: experience of Bangladesh Rural Advancement Committee (BRAC).* Bull World Health Organ, 2003. **81**(3): p. 183-9.
146. Mehnaz, A., et al., *Detection and management of pneumonia by community health workers--a community intervention study in Rehri village, Pakistan.* J Pak Med Assoc, 1997. **47**(2): p. 42-5.
147. Sylla, A., et al., *Assessment of management training for low-level community health workers providing care for children with acute respiratory infections in four districts of Senegal.* Rev Epidemiol Sante Publique, 2004. **52**(3): p. 243-7.
148. Solomon, A.W., et al., *Pilot study of the use of community volunteers to distribute azithromycin for trachoma control in Ghana.* Bull World Health Organ, 2001. **79**(1): p. 8-14.
149. Suri, A., K. Gan, and S. Carpenter, *Voices from the field: perspectives from community health workers on health care delivery in rural KwaZulu-Natal, South Africa.* J Infect Dis, 2007. **196 Suppl 3**: p. S505-11.
150. Barker, R.D., F.J. Millard, and M.E. Nthangeni, *Unpaid community volunteers--effective providers of directly observed therapy (DOT) in rural South Africa.* S Afr Med J, 2002. **92**(4): p. 291-4.
151. Johnson, B.A. and S.K. Khanna, *Community health workers and home-based care programs for HIV clients.* J Natl Med Assoc, 2004. **96**(4): p. 496-502.
152. Johnson, H.A., *U.S. deaf education teacher preparation programs: a look at the present and a vision for the future.* Am Ann Deaf, 2004. **149**(2): p. 75-91.
153. Lwilla, F., et al., *Evaluation of efficacy of community-based vs. institutional-based direct observed short-course treatment for the control of tuberculosis in Kilombero district, Tanzania.* Trop Med Int Health, 2003. **8**(3): p. 204-10.
154. Schmeller, W., *Community health workers reduce skin diseases in East African children.* Int J Dermatol, 1998. **37**(5): p. 370-7.
155. Umar, U.S., E.A. Olumide, and S.B. Bawa, *Voluntary health workers' knowledge, attitude and practices regarding record keeping in Akinyele LGA of Oyo State, Nigeria.* Niger Postgrad Med J, 2002. **9**(1): p. 17-22.
156. Kelly, J.M., et al., *Community health worker performance in the management of multiple childhood illnesses: Siaya District, Kenya, 1997-2001.* Am J Public Health, 2001. **91**(10): p. 1617-24.
157. Delacollette, C., P. Van der Stuyft, and K. Molima, *Using community health workers for malaria control: experience in Zaire.* Bull World Health Organ, 1996. **74**(4): p. 423-30.
158. Mubyazi, G., et al., *Local Primary Health Care Committees and Community-Based Health Workers in Mkuranga District, Tanzania: Does the Public Recognise and Appreciate Them?* . Ethno-Medicine, 2007. **1**(1): p. 27-35
159. Datar, A., A. Mukherji, and N. Sood, *Health infrastructure & immunization coverage in rural India.* 2007. **125** (1): p. 31-42.
160. Bhattacharyya, K., et al., *Community Health Worker.Incentives and Disincentives:How They Affect Motivation, Retention, and Sustainability.* 2001.
161. Hubley, J.H., *Barriers to health education in developing countries.* Health Educ. Res., 1986. **1**(4): p. 233-245.
162. Nutbeam, D., *Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century.* Health Promot. Int., 2000. **15**(3): p. 259-267.
163. Andreasen, A.R., *Marketing Social Marketing in the Social Change Marketplace* 2001. **21**(1): p. 3-13.
164. WHO, *Social marketing of insecticide-treated bednets: the case for Pakistan :http://www.emro.who.int/Publications/EMHJ/1302/article23.htm.* Eastern Mediterranean Health Journal, 2007. **13** (2).

165. Kenya, P.R., et al., *Oral rehydration therapy and social marketing in rural Kenya.* Soc Sci Med, 1990. **31**(9): p. 979-87.
166. Black, T.R. and J.U. Farley, *The application of market research in contraceptive social mass marketing in a rural area of Kenya.* J Mark Res Soc, 1979. **21**(1): p. 30-43.
167. PSI/Zimbabwe, *PSI/Zimbabwe* http://www.psi.org/Where_We_Work/zimbabwe.html.
168. Mushi, A., et al. *Community Acceptance of Intermittent Preventive Treatment for Malaria Control in Tanzanian infants : Presentation at the American Society of Tropical Medicine and Hygiene 55th Annual Meeting Atlanta Marriott Marquis Atlanta, Georgia, USA.November.* in *The American Journal of Tropical Medicine.* 2006.
169. Kremer, M. and E. Miguel, *The illusion of Sustainabilty.* 2004.
170. Price, N., *The performance of social marketing in reaching the poor and vulnerable in AIDS control programmes.* Health Policy Plan, 2001. **16**(3): p. 231-9.
171. Kerr, D., *Community Theatre and Public health in Malawi.* Journal of Southern African Studies, 1989. **15**(3): p. 469-485.
172. Katz, E., M. Levin, and H. Hamilton, *Traditions of Research on the Diffusion of Innovation.* . American Sociological Review, , 1963. **28**(2): p. 237-252.
173. Breman, J.G., M.S. Alilio, and A. Mills, *Conquering the intolerable burden of malaria: what's new, what's needed: a summary.* Am J Trop Med Hyg, 2004. **71**(2_suppl): p. 1-15.
174. Green, L.W., *Modifying and developing health behavior.* Annu Rev Public Health, 1984. **5**: p. 215-36.
175. Anya, S.E., A. Hydara, and L.E. Jaiteh, *Antenatal care in The Gambia: missed opportunity for information, education and communication.* BMC Pregnancy Childbirth, 2008. **8**: p. 9.
176. Muela, S.H., et al., *Medical syncretism with reference to malaria in a Tanzanian community.* Soc Sci Med, 2002. **55**(3): p. 403-13.
177. Muvandi, I., *Male fertility and sexual behaviour.* Afr Link, 1996: p. 28-9.
178. Sekirime, W.K., et al., *Knowledge, attitude and practice about sexually transmitted diseases among university students in Kampala.* Afr Health Sci, 2001. **1**(1): p. 16-22.
179. Sahlu, T., et al., *Sexual behaviours, perception of risk of HIV infection, and factors associated with attending HIV post-test counselling in Ethiopia.* AIDS, 1999. **13**(10): p. 1263-72.
180. Minja, H., et al., *Introducing insecticide-treated nets in the Kilombero Valley, Tanzania: the relevance of local knowledge and practice for an information, education and communication (IEC) campaign.* Trop Med Int Health, 2001. **6**(8): p. 614-23.
181. Hetzel, M.W., et al., *Understanding and improving access to prompt and effective malaria treatment and care in rural Tanzania: the ACCESS Programme.* Malar J, 2007. **6**: p. 83.
182. Walt, G. and L. Gilson, *Reforming the health sector in developing countries: the central role of policy analysis.* Health Policy Plan, 1994. **9**(4): p. 353-70.
183. Williams, L. and a. Wilkins, *The Health Services of Tanganyika: A report to the Government* Medical Care, 1964. **2**(1): p. 27-29.
184. Hall, B., *Hall B Mtu ni Afya. Tanzania's Health Campaign . (Information Bulletin No. 9) POPLINE Document Number: 022712.* 1978. p. 74
185. Kopoka, P.A. *Provisiono Of Health Services In Tanzania In The Twenty First Century: Lessons From The Past. .* in *A workshop on Economic Policy*

Environment in Tanzania in the twenty - first century: Lessons from the Nyerere legacy held from 30th March to 31st March 2000 Dar-es-Salaam.
186. Mboera, L.E., et al., *Knowledge and health information communication in Tanzania.* East Afr J Public Health, 2007. **4**(1): p. 33-9.
187. URT, *Guidelines For The Establishment And Operations Of Council Health Service Board And Health Facility Committees:* , R. United Republic Of Tanzania: The President's Office, Administration And Local Government And Ministry Of Health Editor. 2001.
188. Manzi, F., et al., *From strategy development to routine implementation: the cost of Intermittent Preventive Treatment in Infants for malaria control.* BMC Health Serv Res, 2008. **8**: p. 165.
189. Mays, N. and C. Pope, *Qualitative research: Observational methods in health care settings.* BMJ, 1995. **311**(6998): p. 182-4.
190. Mays, N. and C. Pope, *Rigour and qualitative research.* BMJ, 1995. **311**(6997): p. 109-12.
191. Pool, R., A. Kamali, and J.A. Whitworth, *Understanding sexual behaviour change in rural southwest Uganda: a multi-method study.* AIDS Care, 2006. **18**(5): p. 479-88.
192. Silverman, D., *Interpreting Qualitative Data: Methods for Analysing Talk ,Text and interaction* 2nd ed. 2004, London: Sage Publications
193. Harris, M., *Cultural Materialism: The Struggle for a Science of Culture.* . 1979, New York. : Vintage Books
194. Ely, M., et al., *Doing qualitative research: Circles within circles.* . 1991, London: Falmer Press. .
195. Gibbs, G.R., *Qualitative Data Analysis Explorations with NVivo.* Qualitative Data Analysis, ed. A. Bryman. 2002: Open university Press.
196. Navuru, A., *Dar Faces Shortage of Vaccine for newborns* in *The Guardian.* 2007, IPPmedia: Dar es Salaam.
197. Marincowitz, G., *Mutual participation the health worker-patient relationship.* South African Family Practice 2004. **46** (4): p. 30-33.
198. URT, *Speech by the honourable Minister for water and irrigation on the estimates for the Ministry's expenditure during 2008/2009 financial year.* United Republic of Tanzania, 2008.
199. Zakus, J. and C. Lysack, *Review article. Revisiting community participation.* Health Policy Plan., 1998. **13**(1): p. 1-12.
200. Ekbal, B., *People's Campaign for Decentralised Planning and the Health Sector in Kerala.*
201. Jamil, K., et al., *The immunization programme in Bangladesh: impressive gains in coverage, but gaps remain.* Health Policy Plan, 1999. **14**(1): p. 49-58.
202. Waiswa, P., et al., *Acceptability of evidence-based neonatal care practices in rural Uganda - implications for programming.* BMC Pregnancy Childbirth, 2008. **8**: p. 21.
203. Cassell, J.A., et al., *The social shaping of childhood vaccination practice in rural and urban Gambia.* Health Policy Plan, 2006. **21**(5): p. 373-91.
204. Kaler, A., *A Threat to the Nation and a Threat to the Men: The Banning of Depo-Provera in Zimbabwe,* . Journal of Southern African Studies, 1998. **24** (2).
205. Feldman-Savelsberg, P., F.T. Ndonko, and B. Schmidt-Ehry, *Sterilizing vaccines or the politics of the womb: retrospective study of a rumor in Cameroon.* Med Anthropol Q, 2000. **14**(2): p. 159-79.
206. Brugha, R.F., J.P. Kevany, and A.V. Swan, *An investigation of the role of fathers in immunization uptake.* Int J Epidemiol, 1996. **25**(4): p. 840-5.
207. Cutts, F., et al., *The use of evaluation to improve the Expanded Programme on Immunization in Mozambique.* Bull World Health Organ, 1990. **68**(2): p. 199-208.

208. Montgomery, C.M., et al., *'To help them is to educate them': power and pedagogy in the prevention and treatment of malaria in Tanzania.* Trop Med Int Health, 2006. **11**(11): p. 1661-9.
209. Ramiro, L.S., et al., *Community participation in local health boards in a decentralized setting: cases from the Philippines.* Health Policy Plan., 2001. **16**(suppl_2): p. 61-69.
210. Berman, P.A., *Village health workers in Java, Indonesia: coverage and equity.* Soc Sci Med, 1984. **19**(4): p. 411-22.
211. Berman PA, Gwatkin DR, and B. SE., *Community-based health workers: head start or false start towards health for all?* Soc Sci Med, 1987. **25**(5): p. 443-59.
212. Mhamba, R., *Impact Assessment of the Most Vulnerable Children (MVC) Community Based Care, Support and Protection in Musoma Rural- A Report fpr the Unicef* http://www.unicef.org/evaldatabase/files/Tanzania_2004_021_Most_Vuln_Childr en.pdf. 2004.
213. MOST/HKI, *Report On A Rapid Assessment Of Vitamin A Supplementation To Young Children And Postpartum Women In Mainland Tanzania.* 2004.
214. WHO, *Declaration of Alma-Ata.* WHO Policy statements, 1978(International Conference on Primary Health Care, Alma-Ata, USSR 6–12 September 1978).
215. Inui, T.S. and W.B. Carter, *Problems and prospects for health services research on provider-patient communication.* Med Care, 1985. **23**(5): p. 521-38.
216. Morgan, C.J. and P.W. Deutschmann, *An evolving model for training and education in resource-poor settings: teaching health workers to fish.* Med J Aust, 2003. **178**(1): p. 21-5.
217. USAID, *The Use of Manual Job Aids by Health Care Providers: What Do We Know?* 2000 **No. 1**.
218. Manderson, L. and P. Aaby, *Can rapid anthropological procedures be applied to tropical diseases?* Health Policy Plan., 1992. **7**(1): p. 46-55.
219. Manderson, L. and P. Aaby, *An epidemic in the field? Rapid assessment procedures and health research.* Soc Sci Med, 1992. **35**(7): p. 839-50.
220. Bradley, E.H., L.A. Curry, and K.J. Devers, *Qualitative data analysis for health services research: developing taxonomy, themes, and theory.* Health Serv Res, 2007. **42**(4): p. 1758-72.
221. Green, J., et al., *Generating best evidence from qualitative research: the role of data analysis.* Aust N Z J Public Health, 2007. **31**(6): p. 545-50.
222. Helman CG and Y. P, *Perceptions of childhood immunisations in rural Transkei-A qualitative study.* South African Medical Journal, 2004 **94**(10): p. 835-8.
223. Brugha, R.F. and J.P. Kevany, *Maximizing immunization coverage through home visits: a controlled trial in an urban area of Ghana.* Bull World Health Organ, 1996. **74**(5): p. 517-24.
224. Heggenhougen , H.K., V. Hackenthal, and P. Vivek *The behavioural aspects of malaria and its control, an introduction and annotated bibliography WHO, TDR* http://www.who.int/tdr/svc/publications/tdr-research-publications/social-aspects-malaria-control. 2003
225. Kaseje, D.C., E.K. Sempebwa, and H.C. Spencer, *Malaria chemoprophylaxis to pregnant women provided by community health workers in Saradidi, Kenya. I. Reasons for non-acceptance.* Ann Trop Med Parasitol, 1987. **81 Suppl 1**: p. 77-82.
226. Victora, C.G., *The millennium development goals and the inverse care law: no progress where it is most needed?* J Epidemiol Community Health, 2008. **62**(11): p. 938-9.
227. Victora, C.G., et al., *Are health interventions implemented where they are most needed? District uptake of the integrated management of childhood illness*

strategy in Brazil, Peru and the United Republic of Tanzania. Bull World Health Organ, 2006. **84**(10): p. 792-801.
228. Mrisho, M., et al., *Understanding home-based neonatal care practice in rural southern Tanzania.* Trans R Soc Trop Med Hyg, 2008. **102**(7): p. 669-78.
229. Valeria Oliveira-Cruz, K.H.A.M., *Approaches to overcoming constraints to effective health service delivery: a review of the evidence.* Journal of International Development, 2003. **15**(1): p. 41-65.
230. Fawcett, B. and J. South, *Community involvement and Primary Care Trusts: The case for social entrepreneurship.* Critical Public Health, 2005. **15**(2): p. 191–204.
231. Smithies, J. and G. Webster, *Community involvement in health: From passive recipients to active participants.* 1998, Aldershot: Ashgate.
232. Rifkin, S., G. Lewando-Hundt, and A. Draper, *Participatory approaches in health promotion and health planning—A Literature Review. London:* , H.D. Agency, Editor. 2007: London.
233. Hanson, K., et al., *Expanding access to priority health interventions: a framework for understanding the constraints to scaling-up.* Journal of International Development, 2003. **15**(1): p. 1-14.

Annex 1 Published paper from this work

Mushi AK, Armstrong Schellenberg J, Mrisho M, Manzi F, Mbuya C, Mponda H, Mshinda H, Tanner M, Alonso P, Pool R *et al*: **Development of a behaviour change communication strategy for a vaccination-linked malaria control tool in southern Tanzania**. *Malar J* 2008, 7(1):191.

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Abstract

Background

Intermittent preventive treatment of malaria in infants (IPTi) using sulphadoxine-pyrimethamine and linked to the expanded programme on immunization (EPI) is a promising strategy for malaria control in young children. As evidence grows on the efficacy of IPTi as public health strategy, information is needed so that this novel control tool can be put into practice promptly, once a policy recommendation is made to implement it. This paper describes the development of a behaviour change communication strategy to support implementation of IPTi by the routine health services in southern Tanzania, in the context of a five-year research programme evaluating the community effectiveness of IPTi.

Methods

Mixed methods including a rapid qualitative assessment and quantitative health facility survey were used to investigate communities' and providers' knowledge and practices relating to malaria, EPI, sulphadoxine-pyrimethamine and existing health posters. Results were applied to develop an appropriate behaviour change communication strategy for IPTi involving personal communication between mothers and health staff, supported by a brand name and two posters.

Results

Malaria in young children was considered to be a nuisance because it causes sleepless nights. Vaccination services were well accepted and their use was considered the mother's responsibility. Babies were generally taken for vaccination despite complaints about fevers and swellings after the injections. Sulphadoxine-pyrimethamine was widely used for malaria treatment and intermittent preventive treatment of malaria in pregnancy, despite widespread rumours of adverse reactions based on hearsay and newspaper reports. Almost all health providers said that they or their spouse were ready to take SP in pregnancy (96%, 223/242). A brand name, key messages and images were developed and pre-tested as behaviour change communication materials. The posters contained public health messages, which explained the intervention itself, how and when children receive it and safety issues. Implementation of IPTi started in January 2005 and evaluation is ongoing.

Conclusions

Behaviour Change Communication (BCC) strategies for health interventions must be both culturally appropriate and technically sound. A mixed methods approach can facilitate an interactive process among relevant actors to develop a BCC strategy.

Background

Malaria continues to be a leading cause of pain, death and poverty in sub-Saharan Africa. Efforts have been directed at the prevention of malaria in pregnant women and young children who carry the greatest burden of disease. In addition to the promotion of treated mosquito nets, sulphadoxine-pyrimethamine (SP) is recommended by the WHO for intermittent preventive treatment of malaria in pregnancy (IPTp) in endemic countries. Intermittent preventive treatment of malaria in infants (IPTi) using SP has been shown to be a promising approach for malaria control in young children, with a protective efficacy of 20-59% against malaria in children during their first year of life [1,2,3]. IPTi consists of a full dose of antimalarial treatment delivered to young children at defined intervals alongside routine health contacts, such as vaccinations at the 2nd, 3rd and 9th month of life. Linking malaria control to Expanded Programme on Immunization (EPI) contacts in this way builds on the success of this well-established program which was launched in 1974 [4,5]. Further studies are underway across Africa under the umbrella of the IPTi consortium to generate evidence to inform a policy decision for public health use of IPTi [6]. A recent review by an expert committee of the US Institute of Medicine concluded that IPTi using SP decreases the incidence of clinical episodes of malaria by 20–30% [7,8],

SP was introduced as Tanzania's first-line treatment for malaria in 2001. However, adverse publicity caused widespread alarm about the safety of this drug, with publication in the national press of dramatic photographs showing people with rare, but very severe adverse events. There was concern that acceptance of IPTi using SP might be compromised. The work described here is part of a community effectiveness study of IPTi using SP in southern Tanzania. The work investigated providers' and communities' understanding of, attitudes and practices related to SP for malaria treatment and IPTp, as well as the acceptability of adding IPTi into existing immunization services. This paper reports a mixed methods approach to inform the development of a behaviour change communication strategy for malaria control with IPTi in southern Tanzania.

Methods

The study involved work at community and health facility levels between August and November 2004, in five districts (Tandahimba, Newala, Lindi Rural, Ruangwa and Nachingwea) of Lindi and Mtwara regions, southern Tanzania. Qualitative data was collected at both levels through focus group discussions and in-depth interviews while quantitative data was collected from health providers through a modular questionnaire during a health facility survey. The districts, with a total population of 890,000 and 136 health facilities, are inhabited by a variety of ethnic groups, predominantly Makonde and Mwera, but including other groups such as Yao, Malaba and Makua. Lindi and Mtwara regions have the highest under-five mortality rates in Tanzania [9]. Geographically, the five districts include the coastal belt along the Indian Ocean to the Makonde plateau in the hinterland, extended woodlands with wild animals and an international border with Mozambique. Swahili, the national language of Tanzania, is widely spoken in the area and was used throughout data collection and in the development of the BCC materials for IPTi.

Rapid qualitative study

Fifty-two focus group discussions (FGDs) and eight unstructured open ended interviews were held with community members and health workers between September 2004 and January 2005. Data was collected by a team of seven experienced field assistants led by a social scientist. The assistants were trained for five days on interview skills, data recording with MP3 recorders and preparation of daily summaries. Training included group work, role-play and practical fieldwork. Data was collected in ten villages,

purposefully selected to represent areas with both low and high EPI coverage rates according to a household survey conducted during 2004. Selection also considered varied geographic locations including coastal areas, the Makonde plateau, semi urban and rural communities, those close to and far from referral hospitals and the international border to Mozambique.

Village leaders were briefed one day before the FGDs and asked to help prepare respondents and venues. On days of data collection, four FGDs were held, one each with "community own resource persons" (widely referred to in Tanzania by the acronym CORPs, they are people who do voluntary work in their community relating to health, agricultural extension work, water, etc.), mothers of babies and pregnant women at Reproductive and Child Health clinics, mothers of babies and pregnant women at village centres and mothers of babies and pregnant women in outlying hamlets. Three pairs of interviewers each held one FGD in the morning and took turns to conduct the fourth session in the afternoon. The FGDs and interviews were facilitated using a guide with questions on perceptions of and experiences relating to vaccination services, malaria, and use of SP, willingness to accept and views on how to implement IPTi. Community understanding of the existing health posters was assessed to determine their clarity to target audiences, in terms of text, images and take home messages. All discussions were recorded using an MP3 voice-recorder and transcribed verbatim. Debriefing notes from each FGD were prepared daily and these together with a review of transcribed text enriched the content analysis process, which involved coding of related text under corresponding themes.

Health facility survey

A modular questionnaire was administered to health workers at all 136 government, NGO and private health facilities (including hospitals, health centres, and dispensaries) in the five districts. As well as information on the structure and function of the health system, one module of the questionnaire included questions to evaluate the health worker's perceptions of SP for treatment and prevention of malaria. This module was designed with input from an initial in-depth interview with a Public Health Nurse at a health centre in Mtwara municipality. A team of 18 research assistants plus a field co-ordinator administered the health facility questionnaire, following four days of training and pilot testing. The supervisor accompanied at least one interview each day and any discrepancies were discussed with the interviewer and later among all team members, and appropriate action taken. Questionnaires were processed using a double data entry system in DMSys software (SigmaSoft International, Chicago, IL, USA http://www.sigmasoftintl.com). Data were checked for logical consistencies, completeness and quality and then summarised according to a pre-defined analytical plan using Stata 8.2 (Stata Corp LP, College Station, Texas, USA).

Development of the BCC strategy

The BCC strategy was developed in such a way as to be feasible and low cost on a national scale. The core of the strategy was interpersonal communication between health workers and mothers at the time of giving babies EPI vaccines. This core was supported by a brand name and posters. To ensure that the content of BCC materials was in harmony with national policies and standards, an extensive series of consultations was done with national stakeholders including senior managers and staff of the Ministry of Health, the EPI programme, the Reproductive and Child Health department, the Health Education Unit, the National Malaria Control Programme and the National Kiswahili Council in Tanzania.

Development of BCC materials
During the rapid qualitative study, results of earlier IPTi efficacy trials in other parts of Tanzania were presented to respondents before discussions about willingness to accept IPTi. The respondents who included health workers, mothers and community-own resource persons were then asked to suggest a brand name for IPTi, images, captions and appropriate channels for BCC messages.

Results

Perceptions of malaria in young children
Malaria was mentioned as a common childhood illness in all FGDs, with fever and crying at night as the main symptoms, occurring particularly during the heavy rains between October and April/May. This season was associated with high mosquito numbers, thought to be directly linked to malaria. Malaria was described as a nuisance to children and a trouble to their parents, particularly mothers because it leads to sleepless nights. Signs of severe malaria and anaemia were attributed to bad spirits, witchcraft, lack of medicines at health facilities and apathy *(uzembe)* among the parents. Severely ill infants were often reported to be treated at home or by traditional healers, despite the knowledge that this could risk their lives due to delays in seeking prompt care at health facilities.

"You go for the first and second time [to the health facility] without getting medicines, and then you can't see the importance of going again when the same child falls sick. I would rather go to traditional healers because you can't get drugs at the health facility" (FGD with mothers in an outlying hamlet).

Child deaths that occurred at home due to delayed treatment or during treatment by traditional healers were accepted because children also die at health facilities.

Perceptions and use of vaccination services
Most respondents felt that it was compulsory for children to attend EPI clinic for vaccinations and weight measurement. Although vaccine-preventable diseases such as pertussis, diphtheria, tetanus and polio were occasionally mentioned, female respondents generally distinguished the vaccines according to how they are administered e.g. as oral drops, into the thigh or into the shoulder. Generally, very few, especially among the male respondents, knew the age at which these vaccines were given. Most respondents were not aware what the vaccines protected against, except for measles vaccine, which they said was given at the 9th month of age. In all areas, mothers were responsible for decision making and action pertaining to vaccination clinics. Nevertheless if the mother is sick, fathers, aunts, sisters, and grandmothers could make decisions or take a baby to clinic. The mother's role of taking a baby to clinic was justified because she can soothe the baby after vaccination by breastfeeding as well as the normal mother-child bond, expressed as the mother knowing the pain of bearing a child *(uchungu wa mwana ajuae ni mama)*. It was also generally agreed that mothers would take their babies to clinic regardless of the father's attitude, due to perceived benefits of vaccines in averting disease and mothers being responsible for caring for sick children.

"When a child falls sick, I will be the one to suffer with the child, while my partner will be with other women" (FGD with mothers in outlying hamlet)

"What if I don't take this baby and then she falls sick? I will take her [to vaccination clinic] and tell him [my husband] that it is up to you, if you want to divorce me because of taking a child to clinic, we will see what happens" (FGD with mothers, village centre)

Mothers also felt obliged to take their babies to clinic because if they did not, they might suffer certain consequences such as denial of treatment in case of illness. Health facility workers often demand the child's health card before treatment partly as a way of confirming the age and weight of a baby, and these records are marked during attendance at clinic for vaccinations and or growth monitoring.

"We take [health cards] to [vaccination] clinic so that a child can get drugs when he or she is sick" (FGD with mothers, village centre)

Mothers who did not use EPI were reported to exist in most areas. Reasons for non-attendance were apathy, distance to the clinic, unfriendly staff, rains, and farming, travelling away from home and fear of wild animals on the way. Some mothers were said not to take their babies to vaccination clinic because they were afraid of abscesses or fevers following injectable vaccinations and the occasional unavailability of vaccines:

"Some mothers fear that when their babies receive an injection they will get fevers and abscesses" (FGD, community own resource persons)

"For example, you may be asked to take your baby to clinic to get the vaccine, but whenever you go, you might miss that vaccination even for a whole year because it is unavailable, contrary to the plans" (FGD, mothers, village centre)

Fear of treatment denial due to lack of up-to-date vaccination records was so strong that a few areas it was reported that some mothers might write vaccination dates on their baby's health cards without actually taking them to clinic. Nearly all Community Own Resource Persons at one coastal village without a functioning health facility said they had heard of mothers in their village who wrote false dates of clinic attendance on their children's health cards to pretend that they had brought their children to clinic.

Acceptance of SP in the community and among health workers

Antimalarials mentioned in FGDs included quinine, generic SP and two SP brands of Fansidar and Metakelfin. At community level, SP was particularly familiar to pregnant women who had used it for IPTp. There were mixed opinions about the benefits and side effects of SP. Many respondents had used SP safely either for themselves or for their children. However, some participants at a semi-urban village preferred Fansidar because they thought it contained less sulphur, which they associated with adverse reactions. Some women did not know whether they had received IPTp, despite saying they had received three white tablets which other participants thought were SP. These white tablets were said to be for making the mother and unborn child healthy, particularly to protect from malaria. Several respondents had heard rumours about adverse effects of SP and some had experienced dizziness (mentioned in many places), and less commonly mouth sores, fatigue, fever, rash, and miscarriage.

"After taking SP (for IPTp) when I was pregnant, my period started". (FGD, Women, Semi-urban)

There was a concern that IPTp might lead to large babies, which would lead to a difficult delivery:

"Some mothers are also scared that they may be harmed during delivery due to the large size of the unborn baby. Others decide to throw these drugs away, because an enlarged baby may cause a rupture." (FGD, mothers, outlying area)

Occasionally, the fears were said to have led mothers to discard the SP. Although most female respondents said they had used SP for IPTp, they were aware of others who threw away SP given to them at clinic for consumption at home. One male participant during FGD with Community Own Resource Persons (semi urban) said that his wife had thrown away SP tablets which she received at clinic for IPTp, because they both suspected that the drugs might be harmful.

Hearsay was the main source of information about the adverse effects of SP while a few knowledgeable participants also recalled statements made by "experts" in the newspapers (Community Own Resource Person).

In the health facility survey, almost all health providers said that they or their spouse were ready to take SP in pregnancy (96%, 233/242) and to treat a relative with SP (95%, 231/242). About three-quarters said they had used SP to treat their own child during his/her most recent illness (72%, 132/183). Only one-fifth of health workers said they had experienced pregnant women who were not willing to take SP (21%, 51/238).

Suggestions for administration of SP for IPTi
Respondents at community and health facilities proposed that like IPT in pregnancy, IPTi should be delivered with direct observation by health workers. Otherwise, it was suspected that some mothers might throw SP away if they were asked to administer at home.

Babies should be given that tablet [IPTi] right there [at clinic]; if we [mothers] take it out of the clinic, they [some people] may mislead us that the drugs are harmful so that we can throw them away (FGD, mothers, village centre).

Understanding existing posters at health facilities
Posters promoting vaccinations, malaria treatment and IPTp were displayed at all health facilities and some village offices. Some of these posters were misinterpreted and participants could often not recall their contents. For example, a poster with instructions about malaria treatment with SP was said to be too wordy. Another poster showing a child protected from six immunisable diseases (*TB, tetanus, polio, pertussis, diphtheria and measles*), represented by arrows and a shield, was understood by only a few respondents to show the importance of immunising children against the six diseases. It was explained by some Community Own Resource Persons that a shield was not known to a young generation in the study districts especially women. Hence, the intended meaning of protection might not always be understood. Much more frequently, respondents thought the poster showed that the child had all six vaccine-preventable diseases.

"Those arrows suggest that the baby is being attacked by all those diseases". (FGD, mothers, village centre)

A second poster showing two pregnant women holding SP tablets for IPTp in the palms of their hands was well understood by some respondents to mean two doses of SP at different stages of pregnancy. Nevertheless, others were not able to tell what was shown on those posters, or had different interpretations.

"I see two pregnant women with their mouths open; I don't know what else they are doing" (FGD, mothers, outlying hamlet)

"I see two girls who are in a bad condition, stretching their arms up as if to seek help" (FGD mothers, outlying hamlet)

Willingness to accept IPTi

Having heard about the results of the IPTi study in Ifakara [1], many respondents at health facility and community levels expressed their willingness to accept IPTi with the hope that it would reduce the nuisance of malaria, particularly sleepless nights (FGD, Distant Hamlet). Others thought that IPTi complements vaccines in children.

"Vaccines are already available for many diseases such as measles but there is no prevention for malaria and it is a very big problem" (Community Own Resource Person)

Some participants simply expressed their trust in IPTi if it was going to be delivered through routine health services, in close collaboration with researchers. There were a few reservations that it might be compromised by a shortage of health staff. Many respondents wanted information about the aim of the new intervention, to know what it consisted of, and to be reassured that it was safe.

Communication channels for vaccination services

Health workers were mentioned in most sessions as the main source of information about vaccination and other child care services. Radio, community meetings at village and ward levels, announcements in churches and mosques, using a village crier and posters placed at health facilities, markets and big trees by the roadside were also mentioned, especially during mass immunisation campaigns. However, there were widespread complaints among mothers about infrequent health education sessions and inadequate explanations of the purpose of EPI vaccinations. On the other hand, some nurses alluded to mothers being uncooperative which barred their efforts to give health education.

"When [we] educate them at clinic, they boycott. If you ask [a mother] which diseases are prevented by this injection, she tells you she doesn't know. A mother can say I don't know even if she is attending with her third baby" (Public health nurse, district hospital).

Development of BCC strategy for IPTi

Many respondents suggested that messages about IPTi should be delivered using the same channels as for routine vaccinations and during campaigns. Guided by the need for large-scale feasibility and low cost, the strategy focussed on interpersonal communication between health workers and mothers, supported by a brand name and posters.

Brand name

FGD participants, health staff, and stakeholders at all levels were asked to suggest suitable brand names for IPTi. The aim was to find a culturally compelling and simple Swahili word or phrase containing concepts about prevention of malaria in infants linked to vaccinations. Many brands were suggested (Table 1) but were not adopted either because of possible negative connotations, no direct association with malaria prevention, or no link to vaccination. For example, the brand SHOKA (axe) was suggested as IPTi would 'chop down malaria as an axe chops down trees', but an axe is a potentially harmful tool and, therefore, not appealing as part of a brand name. OKOA (save) was suggested as this might convince mothers that the intervention would save lives, but there was no easy way to link OKOA with either malaria or EPI. The brand name MKINGE (protect him or her) was chosen because as this draws from a word that mothers often use for vaccines (*kinga*, meaning protect). When used as part of the phrase *"MKINGE mtoto wako dhidi ya malaria"* (protect your child from malaria) the connection between IPTi, malaria prevention and routine vaccinations is clear. Both training materials for health

workers and the posters developed made extensive use of the "MKINGE" brand name for IPTi.

Posters

Building on the strengths and gaps on how existing posters were understood and suggestions from respondents, two posters for display at health facilities were developed and pre-tested. It was argued in various FGD sessions that mothers would get the messages from posters if they contained attractive images and clear messages. Illiterate mothers were said to ask others if they wanted to understand the written messages on health posters displayed at health facilities.

The posters were pretested in parts of Dar es Salaam, Lindi and Mtwara regions, to ascertain the clarity and of captions, images and design. Community representatives, health workers and influential people at district and national levels were also consulted to ensure the posters were technically sound and culturally appropriate.

Poster I: What is IPTi?

The aim of this poster was to help health facility staff explain to mothers what IPTi is and when it is given. When pretested (Figure 1), the poster was perceived to show a single mother, whose dress make her look unhealthy, holding a baby, and an anxious nurse preparing medication ready for administering to the child. The caption "*Mkinge mtoto wako dhidi ya malaria*" *i.e.* "protect your child against malaria" was perceived to be too scattered. The background and font colours were not appealing to most respondents.

The final version (Figure 2) was perceived in pretesting to be attractive, showing a friendly nurse giving IPTi to a baby, as other happy women with their babies queue for IPTi at a vaccination clinic. The captions read (1) "Protect your child against malaria" (2) "MKINGE is the delivery of SP to babies when they are given vaccines, at the age of 2, 3 and 9 months".

Poster 2: What does IPTi do?

The aim of this poster was to explain the benefits of IPTi to mothers and to reassure them about the safety of the intervention. During pre-testing of the first draft (Figure 3), participants thought the sleeping baby was either dead or very sick. Another baby lying on the mat at the bottom left of this poster was also thought to be unhealthy.

The final version (Figure 4) shows a healthy mother and her child in a rural setting. There are three captions (1) "Protect your child from malaria" (2) "MKINGE reduces malaria and anaemia" *(3)* "Many children have already used MKINGE".

The posters also show the logo for the IPTi Consortium, the Tanzanian Ministry of Health and Ifakara Health Research and Developlement Centre (renamed Ifakara Health Institute in July 2008). The posters were produced and distributed to health facilities in the first quarter of 2005 to support implementation of IPTi.

Discussion

The success of interventions and control programmes is moderated by local priorities and conditions, and the development of effective information, education and communication to support behavioural interventions requires good community based data [10]. Mixed research methods helped the study team to understand the local socio-cultural context about malaria, anaemia, SP and vaccinations before introduction of IPTi. The resulting

local knowledge, experiences and expectations from community and health providers were used to inform the development of a BCC strategy for implementation of a new vaccination-linked malaria control tool in southern Tanzania.

Several women were interviewed who had probably used IPT in pregnancy but were unaware of it. There was no local term for IPT in pregnancy, and this could partly be due to lack of a brand name. A brand name helps to strengthen community knowledge and understanding of a new intervention, makes it easier to train health staff, and to manage, monitor and evaluate.

The success of health interventions depends upon an approach that is gender-sensitive [11]. Our findings suggested mothers were culturally accepted and expected to be key decision-makers for matters related to vaccination services. Mothers in our study took their babies for vaccination despite complaints of fevers and swellings after injections. In other settings, fear of side effects has been reported to deter attendance to EPI clinic [12]. Our findings suggest that concerns about side effects were outweighed by perceived benefits of weight measurement and vaccination together with avoiding the denial of treatment if the child's health card is incomplete.

There was an interest to explore rumours about SP because negative perceptions have been reported to affected behaviour and uptake of other reproductive health services [13]. Rumours about adverse effects of SP in our study featured in a few peri-urban settings, originating from hearsay and newspapers. Debates among researchers and decision makers prior to change of first line antimalarial treatment from chloroquine to SP also contributed to these widespread rumours [14]. Yet, many respondents had personally or knew others who safely used SP for malaria treatment or IPT in pregnancy. None of the respondents in our study had first-hand experience of adverse effects of SP and there were no vivid local examples about it. Implementation of IPTi with SP was, therefore, widely welcomed, especially after information that it would be through the routine health delivery system which they trusted. The extent to which the source of IPTi is trusted might influence decisions about IPTi.

Study limitation

It should be noted that the data collection process was relatively rapid and might not facilitate in-depth understanding of socio-cultural issues. The findings were urgently required to inform development the BCC strategy.

Advantages of approach used

Quantitative data on the coverage of EPI guided purposeful selection of the areas where qualitative data was collected. As an interactive process, the rapid qualitative data collection and quantitative health facility survey enabled involvement of local communities, front line health workers, district and national stakeholders in the development of BCC materials for IPTi.

Through this process, awareness was created and co-ownership of IPTi promoted in line with project's guiding principle of "together we develop IPTi". The methods used did not only help to inform development and pre-testing of BCC strategy but also helped in understanding of preferred communication channels from the viewpoint of the target audiences. FGDs general reveal "normal" behaviour and what is expected in a given society as people of similar characteristics freely interact to discuss pertinent issues in their real life context.

In deciding the BCC strategy, not all of the communication channels proposed were adopted -- such as radio, ward and village meetings and using village criers. The meetings would be prohibitively expensive for large-scale implementation by the Ministry of Health. Radio would have led to information about IPTi reaching listeners living outside the project area. Instead, interpersonal communication between health staff and mothers was used, supported by posters and a brand name, images and messages that were prioritised, valued and resonant with the local culture, to enable a culturally compelling BCC strategy [15]. This was in keeping with approaches used by routine health services in sensitising communities about EPI and malaria interventions. Health workers were expected to use these posters in educating mothers about IPTi. This approach made implementation feasible and sustainable for use on a larger public health scale if and when needed.

Conclusions

This study describes the development of a behaviour change communication strategy to support implementation of IPTi in southern Tanzania. This paper shows how mixed research methods were applied to inform the development and pretesting of BCC materials in view of local knowledge, experiences and expectations of community members and health providers as well as the Ministry of Health. The process used was intended to make the BCC materials culturally appropriate and technically sound. The BCC materials developed were made available in line with implementation phases of IPTi and are being evaluated in the context of monitoring the acceptability of this new malaria control tool.

Competing Interests
The authors declare that they have no competing interests.

Authors' Contributions
AKM participated in the study design, drafting and refining data collection tools, data collection and analysis and first draft of this manuscript. JAS, DS and RP provided technical input on the study design, data collection tools and data collection, and contributed to analysis and writing this manuscript. HM participated in designing and collection of the rapid qualitative study and commented on the manuscript, MM participated in designing and collection of rapid qualitative study and in Health facility Survey, CM and FM participated in designing the tools for Health Facility Survey and led data collection, HM, MT and PA provided technical input to the design of the study. All authors read and approved the final manuscript. .

References

Schellenberg D, Menendez C, Kahigwa E, Aponte J, Vidal J, Tanner M, Mshinda H, Alonso P: **Intermittent treatment for malaria and anaemia control at time of routine vaccinations in Tanzanian infants: a randomised, placebo-controlled trial.** *Lancet* 2001, **357**:1471-1477.

Chandramohan D, Owusu-Agyei S, Carneiro I, Awine T, Amponsa-Achiano K, Mensah N, Jaffar S, Baiden R, Hodgson A, Binka F, Greenwood B: **Cluster randomised trial of Intermittent preventive treatment for malaria in infants in area of high, seasonal transmission in Ghana.** *BMJ* 2005, **331**:727-733.

Macete E, Aide P, Aponte JJ, Sanz S, Mandomando I, Espasa M, Sigauque B, Dobaño C, Mabunda S, DgeDge M, Alonso P, Menendez C: **Intermittent preventive treatment for malaria control administered at the time of routine vaccinations in Mozambican infants: a randomized, placebo-controlled trial.** *J Infect Dis* 2006, **194**:276-85.

Expanded Programme on Immunization.
http://www.who.int/immunization/aboutus/en/

UNICEF. **Trends in immunization coverage.**
http://www.childinfo.org/immunization_trends.html

The IPTi Consortium http://www.ipti-malaria.org

Editorial. **Preventing malaria in infants: a strategy that works.** *The Lancet* 2008 **372**: 264.

IOM (Institute of Medicine). 2008. **Assessment of the Role of Intermittent Preventive Treatment for Malaria in Infants: Letter Report**. Washington, DC: The National Academies Press. http://www.nap.edu/catalog.php?record_id=12180.

Research and Analysis Working Group, Poverty Monitoring System, Government of Tanzania: *Poverty and Human Development Report 2005*. Dar es Salaam; 2005.

Manderson L: **Applying medical anthropology in the control of infectious disease.** *Trop Med Int Health* 1998, **3**:1020-7.

Tanner M, Vlassoff C: **Treatment-seeking behaviour for malaria: a typology based on endemicity and gender.** *Soc Sci Med* 1998, **46**:523-32.

Bosu WK, Ahelegbe D, Edum-Fotwe E, Bainson KA, Turkson PK: **Factors influencing attendance to immunization sessions for children in a rural district of Ghana.** *Acta Trop* 1997, **68**:259-67.

Feldman-Savelsberg P, Ndonko FT, Schmidt-Ehry B: **Sterilizing vaccines or the politics of the womb: retrospective study of a rumor in Cameroon.** *Med Anthropol Q* 2000, **14**:159-79.

Mubyazi GM: **The role of research in changing antimalarial drug policy in Tanzania. Working Paper.** Alliance for Health Policy and Systems Research (AHPSR), Geneva; 2003.

Panter-Brick C, Clarke SE, Lomas H, Pinder M, Lindsay SW: **Culturally compelling strategies for behaviour change: a social ecology model and case study in malaria prevention.** *Soc Sci Med* 2006, **62**:2810-25.

Figure Legends

Figure 1 – Draft version of poster to help health facility staff explain to mothers what IPTi is and when it is given.

Figure 2 – Final version of poster to help health facility staff explain to mothers what IPTis and when it is given.

Figure 3 – Draft version of poster to explain the benefits of IPTi to mothers and to reassure them about the safety of the intervention.

Figure 4 – Final version of poster to explain the benefits of IPTi to mothers and to reassure them about the safety of the intervention.

Tables

Table 1 - Suggested brand names for IPTi

Suggested brand name	Literal translation	Intended message	Remarks
SHOKA	*An axe*	*IPTi will chop down malaria as an axe does for trees*	*Could be perceived as a harmful tool*
MKIWA	*None*	*Mpango wa Kinga ya Watoto i.e. a strategy for protecting children*	*MKIWA in Swahili language also stands for an orphan or hopeless person*
LENGA	*Target / shoot / aim at*	*IPTi targets malaria, anaemia and other child problems*	*There is no direct malaria-EPI and child link*
OKOA	*Save*	*To convince the mothers that this strategy saves lives*	*No direct malaria-EPI and child link*
SHAMIRI	*Flourish*	*Children will grow well and happily without diseases*	*No direct malaria-EPI link*
MWAMBA	*A rock*	*IPTi sounds like a rock where children can hide from malaria*	*No direct malaria-EPI link*
NGUZO	*A pillar*	*If a child leans on this strategy, he/she will not fall down because of malaria and anaemia.*	*No direct malaria-EPI link*
MKINGE	*Protect him/her*	*Brand name MKINGE draws from the word kinga that mothers often use for vaccines.*	*When part of the phrase "MKINGE mtoto wako dhidi ya malaria"* (prevent your child from malaria), *MKINGE gives a positive image for IPTi linked to both malaria prevention and routine vaccinations*

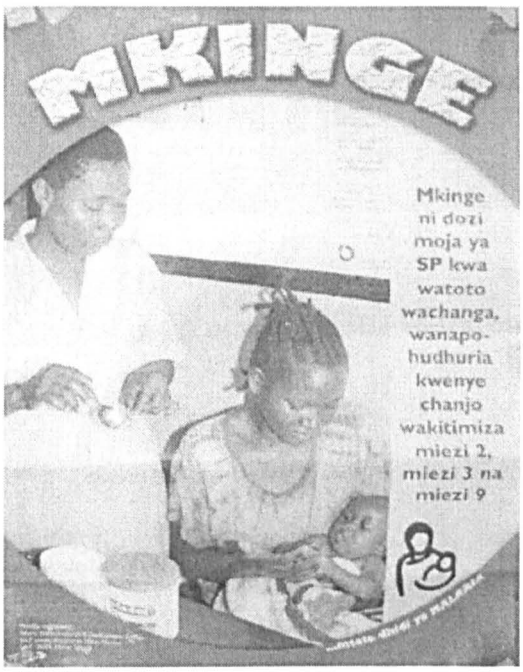

Figure 1
Draft version of poster to help health facility staff explain to mothers what IPTi is and when it is given.

Figure 2
Final version of poster to help health facility staff explain to mothers what IPTis and when it is given.

Figure 3
Draft version of poster to explain the benefits of IPTi to mothers and to reassure them about the safety of the intervention.

Figure 4
Final version of poster to explain the benefits of IPTi to mothers and to reassure them about the safety of the intervention.